The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 110, No. 21 — COPYRIGHT, 1938, BY AMERICAN MEDICAL ASSOCIATION CHICAGO, ILLINOIS — MAY 21, 1938

110 938

PREMENSTRUAL TENSION

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PHILADELPHIA

Premenstrual tension is the term applied by Frank[1] to a relatively uncommon train of symptoms which occurs cyclically during the premenstruum in certain women of child-bearing age. As current literature is devoid of reports on this subject, its actual incidence cannot be estimated. The fact, however, that my associates and I have encountered the condition in fourteen women during the past three years suggests that it may be more frequent than is now suspected. The opportunity to study and treat ten of the group has led to a plan of management of premenstrual tension which seems to yield excellent therapeutic results and deserves a wider application. In pursuance of the latter thought, this report has been written.

SYMPTOMS

The unpleasant symptoms which 40 per cent of normal women suffer, in varying degrees, before the onset of menstruation are well known. Minor menstrual molimina may be manifest as fatigue, irritability, lack of concentration, backache and a vague sensation of pelvic discomfort. When the latter assumes the major proportions of a disabling pain, it is properly termed dysmenorrhea. I am not concerned herein with the problem of dysmenorrhea but rather with the pathologic manifestations of some of the normal menstrual complaints, manifestations sufficiently intense and delineated to deserve recognition as a morbid entity. Dysmenorrhea may or may not accompany the syndrome.

When well marked, premenstrual tension is readily recognized. It occurs in women between the ages of 20 and 40 years and is characterized by a cyclic alteration of personality. This alteration appears abruptly from ten to fourteen days prior to the expected menstruation and terminates dramatically with the onset of the flow. The monotonous periodicity of the syndrome and its precursive relationship to the menses are striking phenomena. The illness regularly begins as a dire and foreboding sensation of indescribable tension. The patient often inadequately describes this sensation by saying that she "would like to jump out of her skin," and her feeling is manifest to observers by her unusual behavior. When the tension periodically reaches its maximum height, the manic activity of the patient beggars description. There are marked physical unrest and constant irritability. The illness may mimic an oncoming mental disease when the more exhausting episodes of motor activity are followed by brief periods of depression and hebetude. The forbearance of the patient's family is taxed beyond endurance by her unnatural and extreme annoyance with trifles. Unreasonable emotional outbursts and causeless crying spells, similar to those which characterize the menopausal syndrome, are frequent. Persistent insomnia, vertigo, painful turgidity of the breasts and constant headache are frequent accompaniments of the syndrome. Nymphomania, when present, is an arresting symptom and commands the deepest sympathy.

The curious phenomenon of premenstrual ulcerative stomatitis, attributed to defective luteinization,[2] may be one of the manifestations of premenstrual tension. It was the major complaint of one of the patients in the present series.

As with any clinical entity, not all the symptoms may be present in a single patient. The following case history, that of a patient selected from a group of fourteen similar patients (table 1), exemplifies the periodic frenzy of premenstrual tension and suggests an effective treatment.

REPORT OF CASE

M. T. C., a white woman, aged 34, the twice-divorced sister of a physician, was first seen May 7, 1935, with severe premenstrual symptoms. Her past medical history included an appendectomy, two induced abortions, one full term pregnancy and a vaginal plastic operation. Her menstrual history was normal, with thirty day cycles since the age of 13.

Her present illness was of seven years' duration and entirely cyclic in character, existing only during the premenstruum and increasing in intensity with the passage of years. During the major portion of the month the patient was a quiet, industrious, mild mannered woman, but exactly ten days prior to each menstruation she changed to an irritable, tensely restless, irascibly shrewish creature with headache, insomnia and nymphomania. The last symptom was outstanding because the greatly increased libido could not be stifled and the patient, despite frequent coitus, was forced to masturbate from fifteen to twenty times daily. This alteration of personality terminated abruptly at the onset of menstruation, only to reappear in twenty days. It was difficult for one who had observed the patient during several cycles to reconcile her dual personality.

General physical examination revealed no abnormalities, and the pelvic organs were in exceptionally good condition. Her height, weight and blood pressure and the results of serologic tests, urinalysis and a complete blood count were within normal limits. Single determinations of the estrogen content of both the blood and the urine during the height of the tension showed no deviation from the normal.

During the past seven years the patient's treatment had included physical therapy, sedatives, psychotherapy and estrogens. The last named, administered hypodermically in two

From the Department of Gynecology, Mount Sinai Hospital.

1. Frank, R. T.: The Hormonal Causes of Premenstrual Tension, Arch. Neurol. & Psychiat. **26**: 1053 (Nov.) 1931.

2. Ziserman, A. J.: Ulcerative Vulvitis and Stomatitis of Endocrine Origin, J. A. M. A. **104**: 826 (March 9) 1935.

courses, had definitely aggravated the symptoms. Bearing this fact in mind and ascribing the syndrome to defective luteinization, I gave the patient intramuscularly 1 international unit of corpus luteum principle, progesterone, daily from the eighteenth to the thirtieth day of the menstrual cycle for three successive months. During this period the patient remained entirely symptom free. However, a relapse occurred during the succeeding month, when no treatment was given. Immediately thereafter, with the hope of permanently rectifying the probable gonadal dysfunction, low doses of radiation to the pituitary gland and the ovaries were administered in three weekly exposures of 50 roentgens each. Since this treatment of two years ago, the patient has been free from the premenstrual tension and has continued to menstruate regularly.

ETIOLOGY

Fifty years ago Jacobi [3] expounded the "menstrual wave" theory and ascribed the menstrual molimina to a cyclic ebb and flow of somatic functions. However,

Endometrial specimen obtained on the first day of menstruation from a regularly menstruating woman, aged 34, with premenstrual tension. Note the total absence of secretory (progestin) changes. Slightly reduced from a photomicrograph with a magnification of 100 diameters.

not until 1931, when Frank [1] reported fifteen cases of premenstrual tension, did a seemingly plausible explanation of the cause exist. Frank determined the levels of estrogen in the blood and the urine of his patients and, finding a high renal threshold for the substance, hypothecated a hormonal pathogenesis for premenstrual tension in certain "labile" women. Such women, according to Frank, do not excrete estrogen in a normal manner. During the premenstruum, the concentration of estrogen in the blood rises and affects the sympathetic nervous system to the extent of the symptoms produced.

In the present series, only four of seven women whose blood and urine were assayed premenstrually for estrogen exhibited a high renal threshold. The fact that the renal threshold for estrogen is not uniformly elevated bespeaks another explanation for the syndrome. It is suggested that premenstrual tension is caused, not by an excess of circulating estrogen, but rather by the presence of unantagonized estrogen. This implies that the primary cause of premenstrual tension is deficient ovarian luteinization, with a decreased production of progestin. The fact that the symptoms arise during the period of corpus luteum activity further strengthens this supposition. Additional evidence may be adduced from the endometrial studies of four women in the present series. Three of the four patients, curetted just prior to or on the first day of a menstrual flow, showed the phenomenon of pseudomenstruation, cyclic uterine bleeding from an endometrium lacking the secretory influence of the corpus luteum hormone, progestin. Two of these three women were found to be bleeding from an interval (proliferative) and one from a hyperplastic (exaggeratingly proliferative) endometrium. As pseudomenstruation is caused by failure of ovulation with subsequent absence of luteinization or by quantitative disproportion in the production of the ovarian hormones, estrogen and progestin,[4] its frequent occurrence in women with premenstrual tension supports the hypothesis of an aberration in the luteinizing process. In the light of our present knowledge, such an abnormality may be caused by deficient production of the anterior hypophysial luteinizing factor or by a refractory state of the ovaries. In either case the immediate result would be a lack of the corpus luteum hormone, progestin. It may be possible in the near future to detect such a deficiency by employing the recently introduced technic of Venning [5] for the assay of urinary pregnandiol, a degradation product of progestin.

On the other hand, if the pathogenesis of premenstrual tension is as herein advanced, namely, a cyclic disturbance of normal luteinization, with deficient production of progestin, why is it not more frequently encountered in women with pseudomenstruation? This and other questions besiege the validity of the hypothesis. Although it may not yet be proved, the theory does provide a rational mode of therapy for premenstrual tension.

TREATMENT

The treatment of premenstrual tension does not, in the absence of a proved etiology, rest on a solid foundation. Frank [1] employed nonspecific eliminative measures or roentgen castration, depending on the severity of the symptoms. Theoretically, assuming defective luteinization to be the cause of the disorder, the administration of the pituitary-like gonadotropin (luteinizing factor) should correct the condition promptly. Practically, however, the currently available doses of luteinizing substances, obtained either from extracts of the anterior hypophysis or from pregnancy urine, do not uniformly effect luteinization in human ovaries. Gonadotropic hormone therapy may become clinically effective when large doses, such as 25,000 rat units,[6] are employed.

In view of the probable cause of premenstrual tension, namely, defective luteinization, with progestin

3. Jacobi, M. P.: The Question of Rest for Women During Menstruation, New York, G. P. Putnam's Sons, 1877.

4. Mazer, Charles; Israel, S. L., and Kacher, Leon: Pseudomenstruation in the Human Female, Surg., Gynec. & Obst. **65**: 30 (July) 1937.

5. Venning, E. H.: Gravimetric Method for the Determination of Sodium Pregnandiol Glucuronidate (An Excretion Product of Progesterone), J. Biol. Chem. **119**: 473 (July) 1937.

6. Ross, R. A.: Observations Pertinent to Gonadotropic Therapy in Gynecology, Am. J. Obst. & Gynec. **34**: 780 (Nov.) 1937.

deficiency or relative hyperestrogenemia, administration of the corpus luteum principle, progestin, seems plausible. Progestin may correct an actual deficiency by substitutive action or may modify an existing excess of estrogen by favoring its elimination.[7] Moreover, as exemplified by one of the patients in this series, such substitutive therapy may eventually result in a permanent cure.

Seven of the ten patients who submitted to treatment were given 1 international unit of progesterone [8] intramuscularly daily or every other day during the second half of each menstrual cycle for from two to three months. Five of the seven patients were entirely symptom free, and the remaining two noted considerable improvement during the period of treatment. In six patients the syndrome reappeared, however, immediately after withdrawal of treatment. The remaining patient, despite the lack of an adequate explanation, was free from premenstrual tension for two years after three courses of progesterone.

Seeking more permanent results, we subsequently employed low dose irradiation of the pituitary gland and ovaries for four of the progesterone-treated patients and for two other patients who had received no previous treatment. The roentgen treatments were administered by two radiologists who followed the technic outlined by Edeiken,[9] which includes three treatments of from 50 to 80 roentgens at weekly intervals to both the pelvic and the pituitary fields. In a patient of average size, the roentgen factors for each treatment are 127 kilovolts, 5 milliamperes, 14 inch distance, 5 mm. aluminum filter for three to five minutes (Edeiken). Four of the six patients so treated have remained free from premenstrual tension during observation periods varying from one and a half to two and a half years. The remaining two patients were also symptom free after the roentgen therapy, but they suffered recurrences of the syndrome after six months and two years, respectively. Both patients received second courses of low dose irradiation and have now been well for more than a year. The periodicity of the menstrual cycle was undisturbed in all the women treated by roentgen rays.

TABLE 1.—*Incidence of the Leading Symptoms of Premenstrual Tension in Fourteen Patients*

Symptoms	Number of Patients
Tense irritability	13
Motor activity (restlessness)	10
Crying spells	8
Headache	7
Vertigo	5
Insomnia	5
Painful turgidity of breasts	4
Nymphomania	3
Associated dysmenorrhea	2
Ulcerative stomatitis	1

The mechanism by which low dose irradiation corrects functional alterations of the pituitary gland and ovaries is a moot question, and the rationale for its use is purely empirical. However, the safety and value of radiation when properly administered have been adequately demonstrated in the reports of Rubin,[10] Drips,[11] Mazer and Spitz,[12] Kaplan [13] and others. Despite the fact that its greatest field of usefulness is in the treatment of certain types of menstrual irregularities, low dose irradiation of the pituitary gland and the ovaries may be applicable in the treatment of regularly menstruating women with functional aberrations of the gonads. It is of course an obvious corollary that the radiation must be administered in controlled doses by a competent radiologist.

One of the ten women who submitted to treatment (table 2) was markedly underweight and for eight weeks was given 8 units of insulin twice daily plus a diet rich in carbohydrate. She gained 17 (7.7 Kg.) pounds, and the premenstrual tension disappeared (follow-up, two years). This observation is interesting in view of the effectiveness of insulin therapy in selected instances of pseudomenstruation.[4]

TABLE 2.—*Effective Therapeutic Agents Administered to Ten Patients with Premenstrual Tension*

Therapeutic Agent	Number of Patients
Progestin	3
Progestin and low dosage irradiation	4
Low dosage irradiation	2
Insulin	1

SUMMARY

The syndrome of premenstrual tension in fourteen women was ascribed to defective luteinization, with subsequent progestin deficiency or relative hyperestrogenemia.

As the harassing symptoms arise during the height of supposed corpus luteum activity and are aggravated by estrogen therapy, substitutive treatment with progestin seemed plausible. Low dose irradiation of the pituitary gland and ovaries was employed in the hope of permanently correcting the probable gonadal defect.

The administration of progesterone (crystalline corpus luteum principle) cured one and temporarily relieved six patients with premenstrual tension. Four of the six and two additional patients were subsequently cured by low dose irradiation to the pituitary gland and the ovaries. One malnourished patient was benefited by a gain of weight, aided by insulin therapy.

2116 Spruce Street.

7. Smith, G. van S., and Smith, O. W.: The Excretion of Estrin by Women, Am. J. Physiol. **100**: 553 (May) 1932.

8. Proluton (Schering Corporation) was employed. In bio-assay, the international unit of this crystalline substance is equal to a Corner rabbit unit of progestin.

9. Edeiken, L.: Small Doses of X-Ray for Amenorrhea and Sterility, Am. J. Obst. & Gynec. **25**: 511 (April) 1933.

10. Rubin, I. C.: Sterility Associated with Habitual Amenorrhea Relieved by X-Ray Therapy, Am. J. Obst. & Gynec. **12**: 76 (July) 1926.

11. Drips, Della G.: Treatment of Functional Menstrual Irregularities of Young Women, J. Iowa M. Soc. **24**: 1 (Jan.) 1934.

12. Mazer, Charles, and Spitz, Louis, Jr.: The Therapeutic Value of Low-Dosage Irradiation of the Pituitary Gland and Ovaries in Functional Menstrual Disorders, Am. J. Obst. & Gynec. **30**: 214 (Aug.) 1935.

13. Kaplan, I. I.: A Study of the End Results of the Treatment of Amenorrhea and Sterility by Radiation of 128 Married Women Over a Period of Twelve Years, Am. J. Obst. & Gynec. **34**: 420 (Sept.) 1937.

The Father of American Psychiatry.—In that year Dr. Benjamin Rush joined the staff of physicians at Pennsylvania Hospital, beginning a thirty year period of service that was fraught with great significance to the mentally ill in America. He was the first American teacher to institute a comprehensive course of study in mental disease; he was the first American physician to attempt an original systematization of the subject. The theoretic structure that he erected was decidedly unsteady, as we shall see, but it marked a real beginning, and an honest one. He wrote the first general treatise on psychiatry in America, and it is no mean tribute to his genius that it remained the only American work of its kind for seventy years after publication. He fully earned the title by which he was known to later generations—"the Father of American Psychiatry."—Deutsch, Albert: The Mentally Ill in America, New York, Doubleday, Doran & Co., Inc., 1937, p. 72.

PRESSURE ON THE BRACHIAL PLEXUS CAUSING SIMULATION OF CORONARY DISEASE

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A series of patients has been observed in which the pressure of a cervical rib or the scalenus anticus muscle on the brachial plexus has been the cause of pain simulating angina pectoris. It is obvious that these diagnoses differ significantly in prognostic and therapeutic implications. The delay experienced by some of these patients before the correct diagnosis was achieved gives me ground for the belief that some discussion of the subject may prove timely.

Pain due to pressure on the brachial plexus is given but scant attention in nonsurgical literature. The occurrence of precordial pain and the simulation of angina pectoris or coronary thrombosis is rarely mentioned.

GENERAL DESCRIPTION

Fischel of Prague is said to have found cervical ribs in 1 per cent of all autopsies.[1] Adson and Coffey [2] state that 55 per cent of the persons in whom they found cervical ribs to be present had no symptoms. It is estimated that perhaps 10 per cent of persons with this condition have symptoms.

The cervical rib may be attached to any cervical vertebra from the second to the seventh. The costal syndrome may be present when the costal element of the seventh cervical vertebra is merely exaggerated.[3] Sometimes the abnormal structure is a fibrous cord which acts like a cervical rib but cannot be visualized on the roentgenogram.[1] In fact, cases are met in which the syndrome is present in the absence of a cervical rib;[4] an abnormality in the relation of the first rib and the brachial plexus is the cause.

The syndrome has been explained [3] as due to a friction neuritis; the nerves are made taut across the sharp edge of the rib as the result of various unfavorable conditions in the relations of the nerves to the bony structures. More recently attention [4] has been directed to the effect of the scalenus anticus muscle causing pressure on the subclavian artery or brachial plexus, or both. This muscle (fig. 1) extends between the transverse processes of the third to the sixth cervical vertebra downward to the scalene tubercle of the first rib. The scalenus anticus may compress the artery or nerves against the cervical rib, if such is present, or it may abnormally elevate the first rib and so interfere with the artery and plexus. If the latter is irritated the scalenus anticus muscle, which receives its innervation from the brachial plexus, may be stimulated to a state of spasm. A "vicious cycle" may be said to exist. The important part played by the scalenus anticus muscle and the fact that it may cause symptoms identical with pressure by a cervical rib, in cases in which there is no extra rib, is the justification for the term "scalenus anticus syndrome."

The average age at which symptoms first appear is 30 years. This delay is explained [3] as due to the higher position of the shoulder girdle in youth, symptoms being less prone to develop when the shoulder girdle is higher. During childhood and adolescence there is a progressive descent of the shoulder girdle, which does not attain its final position until adult life. In some persons a further droop may be acquired as a result of faulty posture.

Pain, paresthesia and anesthesia in the area supplied by the affected nerve are the usual symptoms. The pain is neuralgic in character: it may begin in the neck, spread downward along the arm to the hand and sometimes the reverse way to the head and side of the chest. Rotation of the head toward the affected side or a downward pull on the shoulder may increase the pain. Loss of or decrease in amplitude of the radial pulse and a bruit over the clavicle are other symptoms and signs that may be noted.

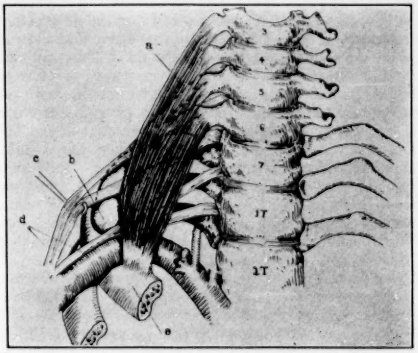

Fig. 1.—Compression of lower and middle cords of brachial plexus and of subclavian artery, between cervical rib and scalenus anticus muscle: *a*, scalenus anticus; *b*, cervical rib; *c*, upper and middle trunks of brachial plexus; *d*, lower cord of brachial plexus and subclavian artery; and *e*, first rib (Bickham's Operative Surgery).

A dilatation or actual aneurysm [5] of the subclavian artery may be caused just beyond the point of constriction. Halstead [6] found this condition in twenty-seven of 716 cases presenting cervical rib.

The simplest form of treatment [7] is that of elevation of the shoulder upward and backward by a sling. Physical therapy is then used in an attempt to develop the trapezius and levator anguli scapulae muscles. If such measures prove unsuccessful and the symptoms warrant it, surgical treatment is advised. Operations are described [8] for removal of the cervical rib or first rib, whichever is the cause of the pressure on the brachial plexus or subclavian arteries. A considerable number of patients have been relieved by section of the scalenus anticus muscle without removal of the bone (fig. 2).

From the Cardiac Clinic of the Massachusetts Memorial Hospitals.

1. Graham, E. A.; Singer, J. J., and Ballon, H. C.: Surgical Diseases of the Chest, Philadelphia, Lea & Febiger, 1935, p. 87.
2. Adson, A. W., and Coffey, J. R.: Cervical Rib, Ann. Surg. **85**: 839 (June) 1927.
3. Jones, Robert, and Lovett, R. W.: Orthopedic Surgery, ed. 2, Baltimore, William Wood & Co., 1929, p. 585.
4. Carrol, cited in Cervical Rib and Scalenus Anticus Syndrome, editorial, J. A. M. A. **109**: 878 (Sept. 11) 1937; Oschner, Alton; Gage, Mims, and DeBakey, Michael: Scalenus Anticus (Naffziger) Syndrome, Am. J. Surg. **28**: 669 (June) 1935; Craig, W. McK., and Knepper, P. A.: Cervical Rib and the Scalenus Anticus Syndrome, Ann. Surg. **105**: 556 (April) 1937. Graham, Singer and Ballon.[1] Jones and Lovett.[3]
5. Lindskog, G. E., and Howes, E. L.: Cervical Rib Associated with Aneurysm of the Subclavian Artery, Ann. Surg. **34**: 310 (Feb.) 1937.
6. Halstead, W. S.: An Experimental Study of Circumscribed Dilation of an Artery Immediately Distal to a Partially Occluding Band, and Its Bearing on the Dilation of the Subclavian Artery Observed in Certain Cases of Cervical Rib, J. Exper. Med. **24**: 271 (Sept.) 1916.
7. Jones and Lovett: Orthopedic Surgery, p. 589.
8. References 1-5.

REPORT OF CASES

CASE 1.—A housewife, aged 59, complained of pain in the left arm and over the precordia. An electrocardiogram was taken because of an irregularity in the cardiac rhythm. This was found to be due to sino-auricular block, and because such rhythm is unusual in an adult it was suggested that a search be made for something, such as a tumor or a cervical rib, causing pressure on the nerves in the neck.

This suggestion was followed out by Dr. Henry J. Bakst, to whom I am indebted for the notes on this case. The original notes were inadequate because of language difficulty.

The patient had felt fairly well until about one month before, when she noted the onset of a severe burning pain in the left side of the chest anteriorly, the left axilla, the shoulder and the inner surface of the left upper arm. This pain was markedly increased when the patient lay on the left side. She also noted that a feeling of weakness and faintness followed when she was lying on the left side; there was no actual syncope. During the past month weakness of the left arm was experienced when she attempted to lift objects. Numbness and tingling of the fingers of the left hand had been noted during the past month. One week before admission slight swelling of the entire left arm with numbness appeared and persisted for two days. Dyspnea after ascending one flight of stairs had been present for several months; the pain in the chest and arm was accompanied by moderate dyspnea. Some vertigo had occurred during the past month.

The neck was not remarkable except for a hard, rounded swelling apparently extending from the cervical spine and palpated in both supraclavicular areas. Pressure on this mass in the left side of the neck caused pain locally and over the lower precordia and left upper arm.

The heart was normal except for occasional intermissions or gaps in the cardiac sounds.

There was some muscular weakness of the left arm but no abnormality of reflexes. The blood pressure was 164 systolic, 96 diastolic.

X-ray examination showed that the heart was normal in size and contour. There was moderate sclerosis of the thoracic aorta. Cervical ribs on the right and left were revealed. There was fibrosis of the right upper lobe of the lungs.

The remainder of the history and examination were irrelevant or normal.

The patient was seen by a surgeon and operation was advised but the patient declined surgical therapy.

CASE 2.—A man, aged 61, a "red cap" at a railroad station, complained of pain in the right shoulder and arm. He has noted a little shortness of breath during the last three weeks when carrying bags for customers. The pain in the right shoulder and arm is experienced at the same time. This pain is located on the top of the shoulder and down the inner aspect of the right arm to the elbow. The arm at these times feels a little weak. The patient tries to shield himself by going slowly and avoiding excessive weight on the right arm.

Physical examination was normal except for a hard mass in both supraclavicular fossae. These masses feel like bones and can be traced back to the lower cervical spine. The subclavian artery, especially on the right, is readily palpable and perhaps a little sclerosed.

Roentgen examination disclosed bilateral cervical ribs and the heart to be normal in size, contour and contractibility.

CASE 3.—A housewife, aged 39, has rheumatic heart disease, mitral stenosis and insufficiency, and aortic insufficiency. She was first informed of her cardiac impairment at the birth of her first child six years ago. She is being guided by the outpatient clinic and has relatively little in the way of symptoms or signs of cardiac insufficiency.

It was noted at a recent visit that she complained of a pain which she says "started in the right neck, went to the right axilla and settled under the right breast." This pain was made worse by lifting with the right arm; the pain might persist for an hour or more. She has noted this particular pain at times during the past six years.

Examination failed to detect a palpable cervical rib. Faulty posture and a low lying shoulder girdle were marked. The x-ray examination disclosed no cervical rib, but a very horizontal clavicle, low lying shoulder and prominent first rib.

The fact that three of these patients were observed within a period of three months offers reasonable ground for the belief that the syndrome is not rare. Doubtless recognition of the first case caused us to detect others more readily. Palpation of cervical ribs is not always easy, and in the case of a number of patients sent for roentgen examination it was found that what was palpated was merely a prominent transverse process of the seventh cervical vertebra. None

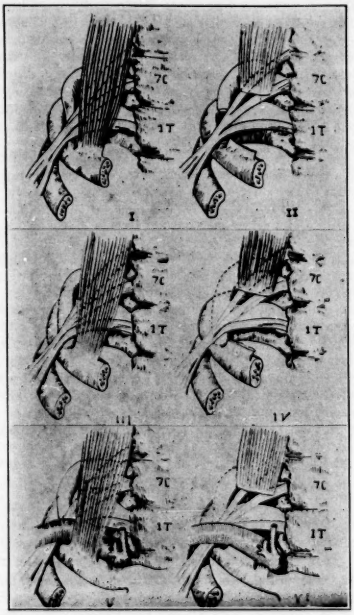

Fig. 2.—On the left, conditions causing compression; on the right, relief by surgical operation: I, Cervical rib and fibrous band to first thoracic rib; III, fully formed cervical rib; V, same as III except that compression of subclavian artery in addition to the lower cord of the brachial plexus is shown. For identification of structures see figure 1 (Bickham's Operative Surgery).

of the latter patients had symptoms warranting treatment for pressure on the cervical plexus.

Regarding the cases cited: The diagnosis of the first patient was obvious after one thought to palpate the neck for a bony mass which could account for the symptoms by pressure. Surgical treatment seemed clearly indicated but has not yet been accepted by the patient.

The second patient should cause little diagnostic confusion, although it is admitted that he was referred to the cardiac clinic, provided one considers that not all pains in the shoulder and arm are due to angina pectoris. It was found on further questioning that this man had been employed as a washroom attendant for years and noted the pain in the shoulder and arm

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only after transfer to his present work, which involves a downward pull on his right arm. A change of occupation may well be the best treatment for this patient.

The third patient caused some doubt regarding the correct diagnosis, because of the absence of a cervical rib in the roentgenogram. However, consultation of a textbook [5] made it apparent that orthopedists recognize the pressure syndrome in the absence of a cervical rib but with abnormal relations between the shoulder girdle and the first rib. What the writer palpated was probably the unduly prominent first rib. Fuller appreciation of the significance of the poor posture of this patient came after reading the description by Jones and Lovett.[3]

Case 4.—A housewife, aged 36, complained of precordial pain and dyspnea. There was slight dyspnea on exertion. She would have slight precordial pain "when nervous." There was moderate palpitation. The patient would get spells of nervousness during which she had vertigo and difficulty in speaking. At these times she would feel weak all over.

She had been treated for heart disease because of shortness of breath for the past five months. During the past month she has had a dull precordial pain, which comes on usually when she is tired. There is sometimes pain in the left arm at the same time as the precordial ache. The pain is never sharp or severe and has a duration of about half an hour. The roentgenogram of the chest disclosed a cervical rib on the left side.

There was a bony prominence with a marked systolic pulsation over it in the left supraclavicular fossa. A rough systolic murmur could be heard over the bony mass. Pressure on the mass on the left side of the neck caused slight numbness in the left hand. There was slight dulling of sensation on the left side of the neck. The right supraclavicular fossa contained a similar but less prominent mass and without the murmur or symptoms on pressure.

The heart was normal except for a faint murmur over the apex impulse.

Roentgen examination showed the left cervical rib articulating with the first thoracic rib. The cervical and thoracic sections of the spine were normal.

The rib was removed by operation. The pain gradually disappeared during the subsequent two weeks. The patient noted that after the operation she was able to swallow better; prior to operation she had overlooked a moderate degree of dysphagia.

The fourth patient is selected from the hospital records; I am uncertain whether I myself examined her. Save that the precordial pain was, as the word implies, left sided, the pain syndrome was similar to the last of the cases cited. These last two patients appear to support each other; the former had definite heart disease plus the scalenus anticus syndrome, and the latter the scalenus anticus syndrome without heart disease. Her former physician found it difficult to accept the cure of his patient by excision of the cervical rib, but a cure has resulted. It should be noted that the pain subsided in the course of two weeks rather than immediately after operation; some degree of neuritis may well have been present.

An additional interesting case has been brought recently to my attention by Dr. Henry J. Bakst. The patient is a man, aged 29, who complained of precordial pain. The onset of the pain occurred six years ago; it has radiated to the left arm during the past year and is increasing in frequency and duration. The pain appears in association with exertion and is particularly severe after an attempt is made to walk with the shoulders back—the patient's usual posture is slightly stooped or round shouldered. Physical examination was normal save for left scoliosis of the spine, which straightens on bending, round shoulders, the left shoulder higher than the right, and pronation of the feet. The patient was referred for orthopedic treatment—arches and exercises—and after two weeks of this has been completely relieved.

A noteworthy feature of these cases is that four of the five patients experienced pain in the anterior aspect of the chest or precordium, a fact that, as far as I am aware, has received little if any attention in the literature. The presence of precordial pain naturally caused an increased tendency to confuse this scalenus anticus syndrome with cardiac disease.

Since the foregoing was written an article [9] has appeared which emphasizes the frequent association of a painful shoulder, due to neuritis of the brachial plexus, with angina pectoris or coronary thrombosis. The shoulder condition may precede the cardiac disease or vice versa, and either appears to aggravate the other. The patient with brachial neuritis following a coronary infarction need not be kept in bed indefinitely; he may be ambulatory and his recovery accelerated by physical therapeutic measures, such as diathermy.

Although the pain complained of by these patients was in the same location and induced by exertion, angina pectoris was not really present. Only certain forms of exertion, such as a downward pull on the shoulder and turning of the head to one side, appear to provoke pain; other forms of exertion are not pain inducing. Often the pain does not cease promptly on cessation of the exertion; in fact, it may persist when the patient is at rest in bed and require differentiation from that associated with coronary infarction. The absence of the remainder of the picture of coronary thrombosis (shock symptoms, changes in the heart sounds, fever, leukocytosis, acceleration of the sedimentation rate, electrocardiographic changes and the like) and the undue persistence of the pain, in case a true brachial neuritis is present, should serve to exclude the cardiac diagnosis.

It is true, nevertheless, that the difference in the pain, as in the cases cited, may not be obvious unless the patient is questioned carefully and the lateral aspects of the neck are examined. Doubtless awareness of the fact that conditions in the neck may cause symptoms simulating either angina pectoris or coronary thrombosis is the most important factor in preventing an error in diagnosis. It is repeated that either brachial neuritis or coronary disease, or both, may be present in the same individual.

CONCLUSIONS

Pressure on the brachial plexus (by cervical ribs, the scalenus anticus muscle and tumors) may cause pain simulating either angina pectoris or coronary thrombosis.

Precordial pain may be so induced, and some relation to exertion may be manifest.

The presence of a cervical rib is not essential.

Pain caused by pressure on the cervical plexus is probably relatively common.

Consideration of both diagnoses—cardiac and that of the brachial plexus—should prevent a mistake in diagnosis.

Differentiation of two conditions may be of great importance to the patient.

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9. Boas, E. P., and Levy, H.: Extracardiac Determinants of the Site and Radiation of Pain in Angina Pectoris with Special Reference to Shoulder Pain, Am. Heart J. **14**: 540 (Nov.) 1937.

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HEAD TRAUMA

REPORT OF 141 CASES

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MEMPHIS, TENN.

The incidence of automobile accidents has increased to such an extent that public attention is being directed to the problem. The attendant bodily injuries make the treatment one of the few surgical problems of public welfare. Because of these injuries, increased attention on the part of both hospitals and physicians must be directed to their care. A large percentage of these cases present head injuries which are attended with a high mortality. My purpose in this paper is to analyze carefully a series of 141 consecutive cases of head trauma admitted to the Neurological Service at the Jewish Hospital, Philadelphia, from May 1933 to May 1936.

Among the many reports in the literature on the treatment of head injury, too few contain careful uniform statistics, and frequently there is no uniform method of analysis. This results in a great variation in accepted modes of treatment. For example, some hospital statistics show death rates as high as from 35 to 50 per cent in cases of "head injury," while others report rates as low as 10 per cent. Wortis and Kennedy [1] reported 1,000 cases of head trauma from the Bellevue Hospital with a mortality of 37.8 per cent. Swift [2] reported a large series of cases with a mortality of 25 per cent, while Fay's [3] most recent report has only a 13.8 per cent death rate in 556 cases. That these results are obtained by surgeons particularly interested in the treatment of head injuries shows that there must be reasons why the figures vary so much. On careful analysis, the variation in statistics is found to be due to three factors; the method of analysis of cases, the hospital routine for receiving this type of patient and the method of treatment.

The series of 141 consecutive cases of head trauma here reported has been handled with these three premises in mind. The cases were classified with a rigid definition of head trauma; i. e., a period of unconsciousness of at least five minutes, a subarachnoid hemorrhage or a fractured skull. The hospital routine and organization were perfected. The nurses and interns were given lectures and instructions in the methods employed, and treatment in the wards was at all times made under personal supervision.

MORTALITY

There were fifteen deaths in this series, giving a mortality rate of 10.6 per cent. It is of particular interest to separate these cases into age groups. There were sixty patients under 20 years of age, sixty-six between 20 and 60 and fifteen over 60. The mortality rate was 5 per cent in the group under 20 years of age, 10.6 per cent in the second group, and 33.3 per cent in the group over 60 years of age. These results are in agreement with the observations of Swift,[2] who obtained the lowest mortality in children and adolescents.

Reviewing the data from the standpoint of the decade of life in which the injury occurred, the following deductions may be made: If a patient is under 20 years of age he has approximately a twenty to one chance of recovery from head injury. If between the ages of 20 and 60, his chances of recovery are reduced to ten to one, whereas if he is over 60 his chances are only three to one. The figures just computed are not related to the severity of the injury. For instance, a number of children recovered who had severe crushing injuries with loss of cerebral tissue, while an apparently very mild cerebral injury in the elderly group was often a sufficient precipitating factor to cause death. Seven of the fifteen patients who died were over 60. Complications secondary to the injury were the chief factors causing death in the aged. For example, in one patient, 69 years of age, an acute cardiac decompensation developed, another, 66 years of age, went into delirium tremens, while in a third, 60 years of age, uremia developed after rather mild trauma.

Among the fifteen deaths, particular attention is directed to a group of four cases because of the similar but unusual clinical courses. Their respective ages varied, being 66, 35, 34 and 19 years. In these cases the trauma was apparently not severe. On admission the patients were more restless and irrational than unconscious. The pulse, blood pressure and respiratory rate were within normal limits. The physical and neurologic examinations were negative except for the irrational state. The spinal fluid was only slightly bloody, if at all, and the pressure of the fluid was consistently low. On first examination the injuries did not appear to be very severe and one expected the patient to regain full consciousness within a few hours. However, the stupor gradually deepened and the patients died within three to ten days. The blood pressure and pulse remained normal and well maintained until the terminal stage. None of the usual remedies were of benefit.

The cause of death in these cases is obscure. No postmortem examinations were possible. It is likely that death was due to widespread multiple areas of softening of the brain associated with petechiae and initial swelling of the smaller blood vessels, as described by Winkelman and Eckel.[4] They showed that, in acute trauma, multiple areas of softening occurred and that the histologic picture was not different from that seen in the brains of patients suffering from severe infections and intoxications. It may be that the sudden lowering of blood pressure during shock starts a vicious cycle of cerebral edema that cannot be overcome.

OPERATIONS

Of the 141 patients, seven underwent operations. Of these, four recovered and three died. Three children with depressed fractures recovered completely following decompression and removal of bone fragments. One patient [5] with a traumatic aneurysm of the internal carotid artery recovered after ligation of the common carotid artery. The three remaining patients were diagnosed as suffering from mass hemorrhage. In two of these a blood clot was found and removed, while in the other severe brain contusion was demonstrated at operation. All three patients died. The operative mortality was 42.8 per cent, the nonoperative mortality 9.8 per cent.

COMMENT

From this series of cases and from studies of similar ones, I do not believe that there should be any distinc-

All cases in this study were under the personal supervision of Dr. Gotten. Dr. Temple Fay assigned these cases of head trauma at the Jewish Hospital to the care of Dr. Gotten, which privilege made this paper possible.

1. Wortis, B. S., and Kennedy, Foster: Acute Head Injuries, Surg., Gynec. & Obst. **55**: 365-370 (Sept.) 1932.

2. Swift, G. W.: Cerebral Injuries Due to External Trauma, Surg., Gynec. & Obst. **62**: 340-346 (Feb.) 1936.

3. Fay, Temple: Treatment of Acute and Chronic Cerebral Trauma by Methods of Dehydration, Ann. Surg. **101**: 76-132 (Jan.) 1935.

4. Winkelman, N. W., and Eckel, J. L.: Brain Trauma; Histopathology During Early Stages, Arch. Neurol. & Psychiat. **31**: 956-986 (May) 1934.

5. Operation in this case was done by Dr. Temple Fay.

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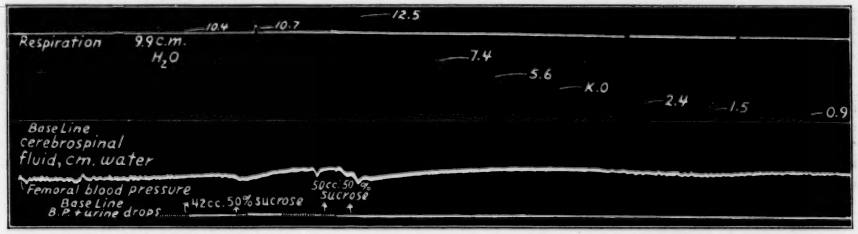
tion between cases in which the skull was fractured and those in which blood was found in the cerebrospinal fluid. These conditions are only an index to the severity of injury the brain has received. It is to be noted that, in this series, eighteen of the patients with fractured skulls did not have blood in the spinal fluid, whereas seventeen of the patients with bloody spinal fluid had no fracture of the skull. This fact is emphasized to show that neither a fractured skull nor a subarachnoid hemorrhage alone can be used as the criterion of head injury. Either of these manifestations of brain trauma is sufficient to warrant hospital or bed care.

Many patients, after a severe blow to the head, have neither of these two manifestations but show symptoms of trauma to the central nervous system. This group is most often classified under the heading of "concussion."

The use of the word "concussion" as the diagnosis of brain injuries must be exercised with caution. With this diagnosis a sense of security is too quickly acquired by the physician and, as a result, serious cerebral complications may be overlooked. It has a definite descriptive meaning and should identify a definite condition. Concussion is a period of unconsciousness followed by symptoms of injury to the nervous system. When treatment is based on this definition, attention in the series is focused on forty-nine cases diagnosed as concussion. Three of the forty-nine patients subsequently died. There was no evidence at the time of admission of a severe brain injury, but the mild injury was sufficient to precipitate complications that resulted in death. None of this group of patients had fractured skulls or bloody cerebrospinal fluid. However, their injuries were sufficient to cause marked manifestations of brain damage. It should be emphasized that among their symptoms were severe convulsions, hallucinations, mania, persistent headache, disorientation and increase in blood pressure. It is probable that all cases in which a period of unconsciousness exists should be classified under the one term, "brain contusion." Inability of the physician to find the clinical manifestations does not wash away the underlying pathologic condition.



Kymographic record showing effect on cerebrospinal fluid after intravenous injection of 50 per cent sucrose solution. From the physiology depart given dial and urethane anesthesia 0.5 Gm. per kilogram of body weight.

PATHOLOGY

The gross pathologic changes of head trauma are familiar to all. They are mass hemorrhages (epidural and subdural), subarachnoid and petechial hemorrhages, lacerations of the brain and generalized edema. The pathologic changes from epidural and subdural hemorrhages produce their effect by compression of the brain.

Subarachnoid hemorrhages may be large or small. Tears in large vessels may bleed directly into the cisternae, the ventricles or the subarachnoid space. Small multiple hemorrhages may also occur in the pia and spread to the surrounding cortex, but by far the most common pathologic changes in cases of head trauma are petechial hemorrhage with intense congestion and local edema. The petechiae are frequently limited to the subcortical white matter. This picture has been described by Cassasa,[6] who found multiple petechial hemorrhages throughout the cortex after head injury without lacerations of the scalp, fracture of the skull or contusion of the cortex. Winkelman and Eckel [4] have also reported microscopic changes in cases of head trauma. They found large and small hemorrhages in the brain with evidence of the onset of edema shortly after injury. Around the areas of petechial hemorrhages was complete destruction of the brain tissue. In one of their cases, hemorrhages were present throughout the entire brain, both in the cortex and in the subcortex, with attending generalized gliosis. In the smaller blood vessels in this case there was some thickening of the lining membrane cells with ischemic cell death. There seems to be sufficient evidence that even in cases of mild head trauma hemorrhage occurs with resulting areas of softening and gliosis of the entire brain.

With the pathologic proof that ischemic cell death occurs in brain trauma, it may be surmised that in mild cases edema eventually becomes so severe that death ensues. In the group of four cases analyzed in the mortality report the clinical and pathologic observations were parallel. As was pointed out, in none of these cases did the initial trauma seem severe. The clinical course, however, was progressive until it terminated in death. There was no focal involvement of the brain, nor did the spinal fluid show evidence of severe injury. By deduction, one may conclude that a generalized cortical edema followed the injury and that ischemic cell death became too great for recovery.

From the pathologic changes just discussed, attention is again called to the large group of cases classified under the heading of concussion. These patients presented no evidence of fractured skull or bloody spinal fluid, though clinical signs of brain injury were evident. For example, focal and generalized convulsions, aphasia, paralysis, nystagmus, severe headache, slow pulse, increase in intracranial pressure and Cheyne-Stokes respirations occurred. Many of these patients had no initial period of unconsciousness but these symptoms developed subsequent to trauma. In three instances death ensued. The careless handling of patients with early evidence of mild trauma may result in death.

6. Cassasa, C. B.: Multiple Traumatic Cerebral Hemorrhages, Proc. New York Path. Soc. **24**: 101, 1924.

TREATMENT

Our experience previous to beginning this series had shown that better results could be gained by nonoperative treatment. Consequently, conservatism was the watchword in this series and is recommended with the following reservation: The only conditions requiring operation are subdural and epidural hemorrhages and those of compound or depressed fractures. The epidural and subdural hemorrhages comprise less than 3 per cent of the total number of cases; therefore the operative method of treatment is rarely indicated. Operation for the relief of intracranial pressure cannot be too highly condemned because anesthetic difficulties add only injury to an already traumatized brain. When these operations are performed for the relief of intracranial pressure, spontaneous rupture of the brain may occur from the removal of bone and incision of the dura. Recovery then becomes more difficult.

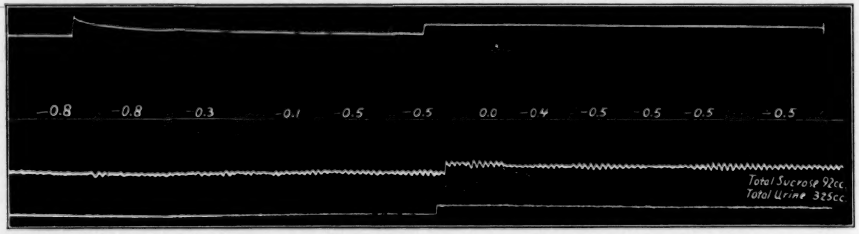
The recent conservative trend in the treatment of cerebral trauma, particularly as regards surgery, is familiar to all. Our results by conservative methods have coincided with those of Fay, Mock, Swift and others. These methods were given preference when it was noted that the chief underlying condition following a blow to the head was a rise in hydrostatic pressure with extravasation of fluid into the perivascular spaces. This resulted in stasis of cerebral circulation and led to anoxemia. Another factor in raising the intracranial pressure is the mechanical blocking of the cerebrospinal fluid system due to hemorrhage into this system. The combined results of the physiologic changes is congestion and edema of the brain. There is little doubt that edema of the brain was present in more than 50 per cent of our cases and free blood was found in the fluid of 65 per cent of them.

Our subseqnent treatment of these cerebral injuries was individualized as much as possible. In each case the treatment given depended on the severity of the injury manifested by the focal or general neurologic condition. A spinal puncture was done as a routine to determine the pressure changes and the degree of hemorrhage. If the pressure was within the normal limits or only slightly elevated, no further punctures were performed. If the spinal fluid pressure was increased to an appreciable degree, fluid was removed until the pressure was brought to a normal level. Subsequent spinal punctures were performed until the normal balance could be maintained by limitation of fluids.

Moderate limitation of fluids was the routine, but the amount varied with the patient's general condition and the spinal fluid pressure. As a rule, between 900 and 1,200 cc. of total fluid was allowed daily. During the first three or four days this amount was gradually increased if the physical condition improved. Limitation of fluids has its chief effect by reducing brain volume, but one must be careful to prevent dehydration of too severe degree. This is manifested by a rise in pulse rate and an elevation of temperature. Sufficient fluids should always be given to prevent this condition.

The other method of controlling intracranial pressure is by use of hypertonic solutions. Dextrose was used in most of our cases, but sucrose [7] has recently been substituted and found to be more satisfactory. A number of experimental and clinical papers have previously pointed out the demerits of concentrated dextrose therapy. Following the injection of dextrose there was found to be a secondary rise in intracranial pressure (Sacks and Wassermann). Bullock, Kinney and Gregersen [8] found that with sucrose this secondary rise did not occur. Their results were confirmed in experiments on dogs in the physiology department of Temple University. The illustrative kymographic record shows the prolonged lowering of intracranial pressure as well as the extraordinary stimulation of urinary output in one of these experiments. The amount of fluid excreted was far in excess of the total amount of administered fluids and there was no toxic effect. Following these experiments, sucrose was administered in 50 per cent solution in cases of head trauma with very satisfactory results. Hypertonic solutions have their greatest value during the period of shock and acute edema, but care must be taken to prevent depletion of body fluids. After the acute period of trauma is over the patient is kept on moderate limitation of fluid for a period of months, depending on the severity of the injury and on the post-traumatic symptoms. Phenobarbital in divided doses is also given for a period of from one to two months. The use of a sedative and some limitation of fluids are necessary in the prevention of post-traumatic symptoms. This phase of the subject has been fully discussed by other authors (Fay).

The most important single factor in the treatment is nursing care, particularly in the receiving ward. Nearly all the patients in our series suffered from some degree of shock. Proper nursing through the shock period is essential for recovery from the immediate effects of trauma. On admission patients were sur-



ment of Temple University Hospital. This chart represents one of a series of similar experiments with sucrose. A female dog weighing 7.5 Kg. was

7. Eli Lilly & Co. supplied the sucrose solution used in the experiments; Dr. Melvin Oppenheimer and Dr. Gotten carried them out. Since this work was done an article has appeared in the literature on the clinical use of sucrose in brain injuries (Hahn, E. V.; Ramsay, F. B., and Kohlstaedt, K. G.: Clinical Experience in the Use of Sucrose Instead of Dextrose in the Osmotic Therapy of Increased Intracranial Pressure of Acute Brain Injury, J. A. M. A. **108**: 773-736 (March 6) 1937).

8. Bullock, L. T.; Kinney, R., and Gregersen, M. I.: The Use of Hypertonic Sucrose Solution to Reduce Cerebrospinal Fluid Pressure Without Secondary Rise, Am. J. Physiol. **109**: 17 (July) 1934.

rounded with external heat in the form of warm blankets and hot water bottles. Hypertonic solutions were administered to restore blood pressure. No attempt was made to repair lacerations of the scalp at this time. Sterile wet dressings were applied and further attention to the wound was delayed until after recovery from shock. Mild sedatives in the form of soluble phenobarbital were given to combat restlessness. X-ray examinations and spinal punctures were at all times deferred until shock was past, because of the danger of exposing the patient's body.

SUMMARY

In a series of 141 consecutive cases of head trauma admitted to the Jewish Hospital, Philadelphia, from May 1933 to May 1936, all patients having a fractured skull, subarachnoid hemorrhages or a period of unconsciousness of more than five minutes are included. There were fifteen deaths, giving a mortality rate of 10.6 per cent. Seven of the patients who died were over 60 years of age. The mortality of patients over 60 years of age was approximately 30 per cent. The mortality of patients under 20 years of age was approximately 5 per cent. The clinical observations on four fatal cases were analyzed. These patients died from what was apparently an ischemic cell death. Only seven patients were operated on. Four recovered and three died. In every case operation was postponed until all other methods of therapy had been considered. Operations were performed only when a mass hemorrhage was suspected.

Particular attention is called to cases presenting on first examination evidence of very mild cerebral injuries. Subsequent examinations showed that mild trauma frequently brings on serious complications in both young and old patients. These complications are manifested by convulsions, transitory paralysis, aphasia, severe vertigo, persistent headache and the like. The pathologic basis for these observations is probably multiple petechial hemorrhages throughout the entire brain.

TABLE 1.—*Jewish Hospital—Head Injuries (May 1933-May 1936)*

Fractured skull with bloody fluid	37
Fractured skull without bloody fluid	18
Brain contusion (bloody spinal fluid, no fracture)	37
Concussion	49
Total number of cases	141
Deaths	15
Mortality percentage	10.4

TABLE 2.—*Classification of Head Injury According to Age*

Age	1-20	20-60	60 and over
Total number	60	66	15
Number of deaths	3	7	5
Mortality rate	5%	10.6%	33.3%

Conservatism in treatment is important. The patient is given preliminary treatment for shock and then a thorough neurologic examination. Routine lumbar punctures are done only to relieve any increase in intracranial pressure. Hypertonic dextrose solution is not advocated. Clinical experiments are being carried out with sucrose solution for the reduction of intracranial pressure, as it does not cause a secondary rise in intracranial pressure.

CONCLUSIONS

1. The most important single feature in treatment is good nursing care, with particular reference to treatment in the receiving ward.

2. The age of the patient is the greatest factor favoring recovery from head injury. The younger the patient, the higher the percentage of recovery.

3. Complications occurring in what appears at first to be mild injury should receive particular attention.

4. Continued conservatism in treatment is strongly advocated, operation being avoided whenever possible. The reduction of intracranial pressure by conservative methods available in every hospital is recommended, such as limitation of fluids, magnesium sulfate and lumbar puncture.

20 South Dunlap Street.

THE EXCEPTIONAL REQUIREMENT OF INSULIN AND SALT SOLUTION IN DIABETIC COMA

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AND
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Although the treatment of major emergencies such as profound diabetic coma cannot be standardized, it must be directed by consideration of fundamental principles. The first is that insulin must be given early enough and in sufficient doses to produce the desired effect, regardless of the number of units. The second is that intense dehydration with fall of blood pressure and consequent anuria must be combated by replacement with liquids containing electrolytes in sufficient quantity to restore blood volume and electrolyte balance. A sufficient dose of insulin may be as little as 30 units or it may be from 500 to 1,200 units. The essential thing is that it shall bring about a restoration of normal carbohydrate metabolism as indicated by a falling blood sugar and a rising carbon dioxide combining power of the blood plasma. Patients treated early in the course of coma will require smaller doses; patients treated after a long period of neglected treatment will require correspondingly larger doses. With regard to the administration of fluid, in general, most patients in diabetic coma will not require more than from 4,000 to 5,000 cc. of salt solution including the amount given intravenously and under the skin in addition to the small amount which can be given by mouth. However, there are exceptions which require an individualization of dosage and the use of such large quantities as would seem dangerous to physicians unfamiliar with these extraordinary cases. The following cases are reported to illustrate the use of 1,320 units of insulin in profound coma and the administration of 11,000 cc. of salt solution in the course of a few hours with successful results:

REPORT OF CASES

CASE 1.—A woman, aged 31, entered the Beth Israel Hospital April 22, 1937, in profound diabetic coma. For at least two months she had been losing weight and strength and had a great increase in appetite. No medical examination or urine test had been made since the age of 5 because of a devotion to a nonmedical cult. For one month she had been in a rest home and for four days she had had no appetite. Two days previously she had been short of breath and she vomited the day before. On the morning of admission she was found unconscious. Catheterization in the hospital produced 30 ounces (900 cc.) of urine containing 4.2 per cent of sugar and 4 plus diacetic acid. The blood sugar was 1,194 mg., carbon dioxide combining power was 3 volumes per cent, nonprotein nitrogen was 55 mg. per

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hundred cubic centimeters. She was given 80 units of insulin. No more urine was secreted, so that the actual time of onset of anuria was uncertain. During the next two hours with anuria, the blood pressure steadily fell to 60 systolic, 38 diastolic, and at times during the next half hour she was pulseless. The rectal temperature was 94 F. The extremities were cold and mottled. The eyeballs were so soft that a reading with a tonometer could not be obtained. In the face of the anuria and the falling blood pressure, despite 4,000 cc. of fluid given subcutaneously, it was decided to administer saline solution constantly by means of an indwelling cannula tied into a vein in the leg. During the next eight hours she received 8,000 cc. of salt solution intravenously, in addition to the 4,000 cc. of salt solution given subpectorally. The accompanying table summarizes the changes in the blood chemistry, the insulin dosage and the amount of fluid administered.

The plasma chloride value was 568 mg. per hundred cubic centimeters seven hours after the administration of salt solution was begun; the nonprotein nitrogen rose to 67 during the first few hours and returned to normal only after eight days. Incidentally, the white blood count was 28,500. The initial red blood count of 5,750,000 fell to 3,950,000, where it remained for two months. For nine hours while she was anuric and the extremities were cold, four nurses massaged the extremities and massaged the fluid given under the breasts to make sure of its absorption. Gastric lavage gave 250 cc. of thick, yellow, dark fluid. Evidence of pitting edema did not develop in spite of the administration of 12,000 cc. of liquid in eleven hours. It must be remembered that the patient was absolutely untreated, and for probably four months she had been breaking all the rules that would ordinarily be imposed on a diabetic patient and had been allowed to go as far in coma toward death as it is possible for any one to go and recover. We feel sure that the patient would have died had the usual routine amounts of liquid or much smaller doses of insulin been given.

Four months after discharge, she gave up treatment. Within three months mild coma again occurred with recovery. Yet this was so mild a case that 8 units of insulin a day kept the urine sugar free and blood sugar normal with good dietary control.

CASE 2.—A woman, aged 25, a kindergarten teacher, was seen by one of us (H. F. R.) through the courtesy of Dr. F. G. Brigham and Dr. Earl Lehnherr on Dec. 9, 1937. The diabetes had begun in September 1927, and she had taken insulin since 1928. Protamine zinc insulin had been given her previous to admission; up to December 4 she was taking 50 units of protamine zinc insulin once a day and was in good condition. December 7 she felt as if she were getting a mild attack of grip; during the night, from 10 o'clock on, she vomited "every ten minutes." At first there was no pain, but the rest of the day she had severe pain in the back. The next morning, December 8, morphine was given for the relief of pain, dyspnea and restlessness. That afternoon she was found unconscious. On admission at 5 p. m. December 8, she had typical Kussmaul respiration and acetone breath and, while apparently unconscious, she could be roused by vigorous stimulation. The eyeballs were soft, the urine sugar was 2.8 per cent, and 3 plus reaction for diacetic acid was found. The blood sugar was 620 mg. per hundred cubic centimeters and the carbon dioxide combining power of the venous blood was 3 volumes per cent. She was immediately given 40 units of insulin and in the next seven hours received a total of 240 units of insulin. Nevertheless, the blood sugar rose to 870 mg. per hundred cubic centimeters, and it was evident that her condition was not improved, since the blood pressure had fallen from systolic 108 to 80 at 11:30 p. m., and the amount of urine obtainable at 9 p. m. was measured only in drops. In fact, at 11 o'clock no urine was obtained. By 3 a. m. December 9 she was pulseless. At this time, since she had been anuric for five hours, it was decided to increase the amount of fluid administered, and a cannula was therefore tied into a vein in the leg and constant infusion of physiologic solution of sodium chloride was begun. A gastric analysis on admission yielded nearly a quart of tarry, black fluid.

She received a total of 11,660 cc. of physiologic solution of sodium chloride, of which, 6,860 cc. was given by the intravenous route in a period of ten hours. The subpectoral fluid previously given had contained dextrose. The total amount of insulin was 850 units. In this instance, in spite of the administration of 240 units of insulin and 4,800 cc. of fluid, in which was included 3,500 cc. of 5 per cent dextrose solution, the patient became anuric and pulseless and the blood sugar rose to 1,000 mg. per hundred cubic centimeters. When, at this point, the use of insulin in doses of 100 units and of constant intravenous infusion of salt solution was begun, the blood sugar fell steadily to 230 mg. per hundred cubic centimeters at the end of thirteen hours, the secretion of urine returned and the blood pressure rose. The amount of blood and chloride lost from the stomach was not estimable except from the patient's description of the frequent vomiting and the tarry matter obtained from the stomach and the further fact that a rather marked anemia developed, so that the red cells six days later numbered 2,990,000 and the hemoglobin was 56 per cent. Under treatment with iron and liver extract the anemia has improved, so that on Jan. 12, 1938, the blood count was normal and the hemoglobin was 80 per cent.

The first plasma chloride four hours after admission was 557 mg. The next day the plasma chloride had risen to 682 mg. and this value had returned to 619 mg. December 11. Undoubtedly to some extent the anemia was due to a dilution effect, but it is true that no visible or palpable edema ever developed. The nonprotein nitrogen of the blood had risen from 60 to 69 mg. per hundred cubic centimeters eight hours after admission but had returned to 38 mg. two days later. January 12 the blood sugar was 130 mg. per hundred cubic centimeters and the nonprotein nitrogen was 28 mg. Her weight on that day was 135 pounds (61 Kg.) as compared with 141 pounds (64 Kg.) on Dec. 4, 1937.

Administration of Insulin, Saline and Dextrose Solution in Diabetic Coma with Recovery

Time, Hours After Admission	Blood: Sugar, Mg.	Blood: Carbon Dioxide Combining Power, Vols. per Cent	Insulin, Units	Fluid (Physiologic Solution of Sodium Chloride): Subpectoral, Cc.	Fluid: Intravenous, Cc.	Fluid: Dextrose in Fluid, Gm.
			Case 1			
0 - 3	1,194	3	280	2,000	.....	50
	1,000	7				
3 - 6	851	5	500	2,000	2,700	..
6 - 8	606	9	200	.....	3,500	..
8 - 12	506	11	...	.....	1,800	..
12 - 20	315	15	300	.....	.....	..
20 - 30	136	18	...	.....	1,800	45
30 - 36	226	17	40	.....	.....	..
			Case 2			
0 - 6	620	3	200	3,300	.....	160
6 - 10	1,000	6	120	1,500	.....	75
10 - 14	760	11	330	.....	2,000	..
14 - 29	230	16	180	.....	3,800	55

COMMENT

These cases illustrate the disadvantages of using dextrose solution during the early stages of coma when the patient's carbohydrate metabolism is so disordered that utilization of the dextrose is impossible. Thus, in each case the administration of dextrose led to the difficulty of deciding whether the high and rising blood sugar was due to increasing severity of the coma or to the administration of the dextrose. During severe and uncontrolled diabetic coma, dextrose is to be regarded as a poison. In such cases the use of dextrose solutions may be the deciding factor in producing the final stage of anuria. When, however, sufficient insulin has been given to bring about the control of carbohydrate metabolism, dextrose solution given either subcutaneously or by vein may be the safest and easiest way of administering food.

In the first case, a total of 8.2 Gm. of sodium bicarbonate was given in the salt solution at a period beginning six hours after hospital admission. It must be confessed that this was an extremely faint-hearted use of sodium bicarbonate in an amount which could not possibly have had any effect on the condition. Patient

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2, when anuric, was given 60 cc. of 10 per cent salt solution just after the administration of constant intravenous infusion had been begun. Possibly this contributed to relief of the anuria.[1]

The use of 1,280 units of insulin in case 1 between 11 a. m. one day and 4 a. m. the next day, a period of seventeen hours, to reduce the blood sugar from 1,194 mg. to 136 mg. per hundred cubic centimeters (value obtained twenty-seven hours after first dose) may seem an unnecessarily large amount. One may take for comparison other conditions in which large amounts of insulin have been used. In the case of a physician with hemochromatosis, 1,600 units of insulin a day was given regularly.[2] In such an instance there is a clear indication of the reason therefor. When the liver is so severely damaged as seriously to reduce the power of removing sugar from the blood in order to store glycogen, it is not strange that the amount of insulin required becomes high. Similarly, in acute hyperthyroidism complicating coma one deals with a disturbance affecting liver function, and in one such case 800 units of insulin was required. Although the average amount of insulin given in the first twenty-four hours of diabetic coma has tended to rise in the interim between 1923 and 1936, during the last eight years the average has varied between 200 and 252 units.[3] However, in the 338 attacks of diabetic coma occurring in 275 patients at the New England Deaconess Hospital a dose of from 500 to 800 units of insulin in the first twenty-four hours has by no means been rare. In the first case here presented the fall of blood sugar was gradual, the urine became sugar free at the time the blood sugar reached 136 mg. and at no time did hypoglycemia develop. Indeed, a few hours later that same day the blood sugar on two different occasions was 218 and 326 mg. There is no justification for feeling, therefore, that the amount of insulin given was excessive or that it was lost in the urine, because it must be remembered that the patient was anuric during the first eight and one-half hours of treatment. Similarly, during the period when the greater part of 800 units was given, patient 2 was anuric and therefore no suspicion can be raised that so much insulin failed to be utilized because it was lost in the urine. Here also the fall in blood sugar, once a sufficient amount of insulin was given was steadily downward, until the value of 230 mg. was obtained twenty-three hours after admission. At this time the urine also became sugar free and a single specimen of urine obtained every hour thereafter was sugar free for twenty-four hours, and during this period it was possible to give the patient much needed food with the confidence that it would be metabolized. Since February 1929 in fifteen attacks of diabetic coma during the first twenty-four hours of treatment at the Deaconess Hospital from 510 to 1,020 units of insulin has been required. In this group occurred three deaths. An aged woman who received 1,020 units died of cerebral hemorrhage that had been present before admission; a young man died of acute hemorrhagic pancreatitis; a woman who received 780 units died with anuria seven hours after admission to the hospital, an attack which we would now treat by the methods here advocated.

Fluid and Electrolyte Requirements.—In only three of 338 attacks of diabetic coma have we thus far used more than 8,000 cc. of fluid, including subcutaneous and intravenous, within twenty-four hours of admission, but in retrospect it has seemed quite evident that we have lost patients in the past with circulatory collapse and anuria because of failure to give sufficient fluid and electrolyte quickly enough. Tremendous variations in the rapidity and severity of diabetic coma occur in different individuals with different types of diabetes. Fundamentally, diabetic coma is due to a lack of control of diabetes and a loss of the power to metabolize carbohydrate and fat normally. A breakdown of fatty acids results in large quantities of ketone bodies. A certain portion of these bodies is excreted as free acid, and other portions are neutralized and excreted. With excessive ketone production, neutralization of the acids is accomplished not merely by means of ammonia but by the withdrawal of fixed base, chiefly sodium. This is accomplished by a reduction in the base of the blood and a reduction of the total salt and the total electrolyte concentration in the body fluid. The fluid is excreted with dehydration, a reduction in the fluid volume of the body and a further loss of base. The end results are (1) hemoconcentration and dehydration; (2) loss of both base and chloride in the body; (3) reduction of the plasma carbon dioxide combining power; (4) the shift of the p_H of the blood toward the acid side. In diabetic coma of only a few hours or a few days' duration with a patient whose diabetes is not fundamentally severe, the amount of insulin and the amount of fluid and base required may be moderate. As a rule with most of our patients from 4,000 to 5,000 cc. of salt solution has been ample, but the cases reported here show clearly that there are exceptions in which vastly more aggressive treatment is required.

Causes for Diabetic Coma of Unusual Severity.—In addition to the usual causes such as infection, breaking the diet and omission of insulin, one must stress delay in diagnosis and treatment as the chief factor in producing unusual severity and fatal termination of coma. These two cases illustrate two causes not often emphasized. One patient, with mild diabetes, was a practitioner of a cult and neglected symptoms until she was actually found unconscious. This was not a case of insulin resistance, but merely of neglected treatment. The other patient presents a more tragic failure: when she was in pain with serious acidosis, prior to being seen by any physician here mentioned, morphine was given, the worst possible medication for a patient in whom the diagnosis and the treatment are at all uncertain. Morphine and diabetes are sworn enemies under such circumstances.

Indications for Constant Intravenous Infusion of Saline Solution in Large Amounts and the Use of Insulin Above 500 Units.—In the future the following factors will again lead us to employ these aggressive methods of treatment:

1. Clinically, a history of prolonged acidosis and lack of diabetic control, unconsciousness for more than six hours and repeated vomiting.

2. On examination, soft eyeballs, dry, cold and mottled skin, a rectal temperature below 97 F., systolic blood pressure below 90 mm. of mercury, gastric dilatation with tarry contents and, finally, diminishing urinary secretions.

3. Laboratory indications of severe coma such as a carbon dioxide combining power of below 10 volumes per cent and a blood sugar of over 700 mg.

81 Bay State Road.

1. Root, H. F.: Anuria Following Diabetic Coma Relieved by Hypertonic Salt Solution, J. A. M. A. **103**: 483 (Aug. 18) 1934.
2. Root, H. F.: New England J. Med. **201**: 201 (Aug. 1) 1929.
3. Joslin, E. P.: Treatment of Diabetes Mellitus, ed. 6, Philadelphia, Lea & Febiger, 1937, p. 351.

GENTIAN VIOLET AS A THERAPEUTIC AGENT

WITH NOTES ON A CASE OF GENTIAN VIOLET TATTOO

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New and Nonofficial Remedies, 1937,[1] gives the information that the medicinally interesting derivatives of triphenylmethane and its homologue tolydiphenylmethane are those which result from the introduction of amino groups forming pararosaniline, $(NH_2C_6H_4)_3COH$, and rosaniline, $(NH_2C_6H_4)_2(CH_3NH_2C_6H_3).COH$.

On treating rosaniline with hydrochloric acid, the hydroxyl of the carbinol group is split off, permitting the formation of the quinoid group, thus forming a typical dye known as fuchsin, $NH_2C_6H_4.CH_3.\ NH_2C_6H_3C:C_6H_4:NH_2Cl$. The red color of pararosaniline chloride or fuchsin is changed to violet by the entrance of a methyl group in the amino groups, the intensity of the violet color increasing with an increasing number of methyl groups. Thus, there are the closely related gentian violet, crystal violet and methyl violet. Gentian violet is a mixture of pentamethylpararosaniline chloride and hexamethylpararosaniline chloride; by some it is defined as a mixture of methyl violet and crystal violet. . . . It seems likely that in therapeutics . . . the one most easily obtained in pure form (crystal violet) will be the one most used. . . . Gentian violet was introduced as an antiseptic by J. Stelling in 1890. . . . Gentian violet occurs as a dark green ("bronze") powder or greenish glistening pieces having a metallic luster. It is soluble in water (1 in 10), alcohol or chloroform, insoluble in ether.

A use mentioned here, not pertinent to this article, is in the treatment of infection with Strongyloides; 0.03 Gm. may be given in enteric-coated capsules. Gentian violet is insoluble in petroleum fractions; "pyoktanin" is the same substance with a proprietary name.[2]

Hyde and Montgomery[3] state that "pyoktanin blue is employed in aqueous saturated solution as a parasiticide . . . valuable as a local and painless application in circumscribed patches of weeping or scaly eczema, in many of the ulcerating syphilodermata, in lupus and in ringworm."

Churchman and Michael[4] reported in 1912 that the dye kills or stops the growth of most gram-positive micro-organisms. Churchman and Russell[5] in 1913 reported the effect of gentian violet on protozoa and tissues growing in a culture medium. They found tissues unharmed by a dilution of 1:100,000, a strength in which gram-positive organisms were inhibited (diphtheria, Staphylococcus aureus, gonococcus and others). They found 10 mg. per kilogram of body weight harmless to rabbits. This dose given intravenously instantly stained all mucous membranes purple, but the stain disappeared. They estimated the concentration in the rabbit's tissues at 1:70,000. They gave an infant with staphylococcic septicemia 5 mg. per kilogram, a dose which proved toxic and depressant to the white blood cell count, which fell from 20,000 to 10,000 in a few hours. Further doses of 3 mg. per kilogram were well tolerated and were attended by prompt improvement and cure.

In 1920 Churchman[6] described the bacteriostatic action of gentian violet in the treatment of wounds. While its selective activity was not so clear cut as in vitro, nevertheless there appeared to be resistance on the part of infections due to gram-negative bacteria and response in those due to gram-positive ones. Two amputation stumps carrying diphtheria bacilli healed, and four others in which diphtheria bacilli were not present also healed. Adjacent dermatitis responded promptly. Churchman used the dye in Vincent's gingivitis with results that seemed very satisfactory. He gave a bibliography of his own work complete to 1920.

Farley[7] (1920) found that a dilution of 1:250,000 of gentian violet in Sabouraud's medium inhibited the gram-positive bacteria but allowed the free growth of fifty-one strains of fungi cultivated from cutaneous tissue. As a restrainer, it was used in the isolation of about twenty strains of pathogenic molds with apparently good results. Mitchell[8] commented on this work as follows:

> The use of 95 per cent alcohol or flaming the tissue seems all that is required inasmuch as all gram-positive bacilli do not grow luxuriantly at room temperature; the most troublesome organism is Penicillium, which in the experiment of Farley invariably was found to grow through all concentrations, even 1:1,000: therefore the method is of least value as a restrainer when most needed.

In 1921 Churchman[9] described the use of gentian violet in the sterilization of closed cavities, especially in gonorrheal arthritis, where great benefit was obtained.

Smith and Casparis[10] (1923) found that gentian violet will inhibit the growth of some staphylococci in a dilution of 1:1,000,000. Young and Hill[11] (1924) used gentian violet in a few cases of septicemia. They found that an intravenous dose of 20 mg. per kilogram of body weight killed rabbits in five hours. One child was given 8 mg. per kilogram and lived, being cured, they believed, by further doses of 5 mg. per kilogram. An adult given 6.8 mg. per kilogram became severely nauseated, with vomiting and diarrhea. They decided that 5 mg. per kilogram is a drastic dose but justified by the extremity of the disease, while smaller doses were well tolerated. A person weighing 50 Kg. (110 pounds) can safely receive 0.25 Gm. intravenously, and he therefore cannot be harmed by (non-allergic) absorption of 25 cc. of 1 per cent solution painted on his skin. This amount will paint a surprisingly large area.

The utility of the dye was by this time common knowledge, THE JOURNAL having carried four important articles regarding it between 1920 and 1924. Dr. Elmer Twyman, surgeon, introduced it into the daily practice of Dr. R. L. Sutton Sr.; Dr. Samuel Sweitzer of Minneapolis has long been an enthusiast, having so

1. The Triphenylmethane (Rosaniline) Dyes, in New and Nonofficial Remedies, Chicago, American Medical Association, 1937, pp. 210-212.
2. U. S. Dispensatory, ed. 21, Philadelphia, J. B. Lippincott Company, 1926, p. 314.
3. Hyde, J. N., and Montgomery, F. H.: A Practical Treatise on Diseases of the Skin, ed. 5, Philadelphia and New York, Lea Brothers & Co., 1900, p. 100.
4. Churchman, J. W., and Michael, W. H.: The Selective Action of Gentian Violet on Closely Related Bacterial Strains, J. Exper. Med. **16:** 822, 1912.
5. Churchman, J. W., and Russell, D. G.: The Effect of Gentian Violet on Tissue Growing in Vitro, Proc. Soc. Exper. Biol. & Med. **11:** 120, 1913-1914.
6. Churchman, J. W.: Selective Bacteriostasis in the Treatment of Infections with Gentian Violet, J. A. M. A. **74:** 145 (Jan. 17) 1920.
7. Farley, D. L.: The Use of Gentian Violet as a Restrainer in the Isolation of Pathogenic Molds, Arch. Dermat. & Syph. **2:** 459 (Oct.) 1920.
8. Ormsby, O. S., and Mitchell, J. H.: Skin and Venereal Diseases, Chicago, Year Book Publishers, 1920, p. 67.
9. Churchman, J. W.: Sterilization of Closed Cavities by Lavage and Staining with Gentian Violet, J. A. M. A. **77:** 24 (July 2) 1921.
10. Smith, D. T., and Casparis, Horton: Gentian Violet in Staphylococcic Septicemia, J. A. M. A. **81:** 2184 (Dec. 29) 1923.
11. Young, H. H., and Hill, Justina H.: The Treatment of Septicemia and Local Infections by the Intravenous Injection of Mercurochrome 220-Soluble and of Gentian Violet, J. A. M. A. **82:** 669 (March 1) 1924.

been cured of his own impetigo, and Oliver S. Ormsby [12] in his textbook mentioned pyoktanin through two editions to 1921, adding in the fourth edition (1934) that pyoktanin is methyl violet. It may be said that there was a wave of popularity about 1920 to 1925 and that the popularity is again decidedly in its ascendency.

Gomez-Vega [13] in 1935 reported the testing of eighteen chemicals with regard to their mycostatic properties. She found the growth of all strains of Monilia inhibited in a dilution of 1:100,000 while most of the strains of Torula and all the strains of Saccharomyces, Epidermophyton and Trichophyton grew in a dilution of 1:400,000 but not in 1:100,000. A patient with monilial paronychia involving five fingers, long resistant to many types of treatment, was cured in two months by using "the standard gentian violet solution in the Gram stain" (anilin-water gentian violet). Crystal violet, she concluded, and its compounds gentian violet and methyl violet, showed marked specific action or selective activity in vitro on fungi of the Monilia and Torula genera, while the other fungi tested withstood five times the concentration.

Percival [14] of Edinburgh reported in 1936 the value of aqueous solution of gentian violet in the treatment of seborrheic dermatitis, which is remarkably severe in Scotland and the Scandinavian countries. Before my visit to the Royal Infirmary in 1932 the alcoholic solution had been customarily used, and I pointed out to my friends that there is no irritation when the aqueous solution is employed. Alcohol caused oozing to become even more severe and precluded the use of the dye oftener than a few applications per week, and pastes had to be used between times.

Florance [15] of Sydney testified to the usefulness of the aqueous solution of gentian violet, which he learned from Percival at the Royal Infirmary in 1934, in seborrheic dermatitis of the scalp, impetigo, impetiginized eczema, paronychia and eczematoid ringworm of the hands and feet. It can be used safely in or about the mouth, he says, and on babies' faces, and there is no ill effect from absorption from large areas painted with the dye. He considers it of comparatively little value in more deeply seated pustular conditions, such as furunculosis, sycosis and Bockhart's impetigo, its action being too superficial. He states that the color of the dye is a great disadvantage but that "patients, tired of ineffective ordinary treatment, are usually quite willing to entail this disadvantage for the sake of ultimate improvement."

Many writers have complained that the color is too objectionable to permit of application on exposed surfaces. This is an inadequate argument in my experience, which coincides with Florance's;[15] the color washes off or is exfoliated from the skin within a week. It is damaging to clothing but washes out eventually, especially if encouraged with alcohol or bleached with chlorine water. It has uniformly been my experience that if the patient is forewarned of the staining, is advised to use cheap clothing, bedclothes and towels, and gets the promised relief there are few complaints. Sometimes a little salesmanship is required. The results justify it. In the hospitals the housekeeper is pacified by a request that the nurses use old linens; and the damage is no greater than when crude coal tar, chrysarobin or permanganate are used—indispensable medicines, all of them.

Gentian violet is cheap, an ounce (30 Gm.) of the crystals costing less than $1. An ounce makes 3 pints (1.5 liters) of 2 per cent solution with water by practical if not meticulous arithmetic. This is a suitable strength for topical application.

I have used it in the mouth in the treatment of Vincent's angina with great satisfaction. One should swab all involved areas, then offer the patient a mouthful of tepid water to be promptly spit out. This so dilutes the unattached dye that the lips are not stained. The clothing should be protected, of course. The mucous membranes are dyed a deep purple, which washes off within a day with saliva, which is swallowed with safety. The taste is preferable to that of silver nitrate.

In topical application my experience has been that gentian violet does not irritate and is nontoxic. Florance [15] protects himself by saying "It is of low toxicity and except in a few cases of idiosyncrasy to the dye (which may occur with the use of any chemical, however dilute) it can be used on any skin." He gives no instance. I have never seen intolerance; I have never read of it elsewhere. If it occurs, it is exceptionally rare, rarer than intolerance to the weak phenol dilution so nearly universal in dermatologists' prescriptions. If a case of sensitivity to gentian violet should be seen it would be worth reporting. I prescribe no other agent with less fear of irritation. This is a real asset in a drug intended for common use, for whenever a patient of mine unpredictably proves sensitive to my medicines he doesn't accept an explanation and he shows no interest in allergy; he hunts up another doctor.

From my experience, I vouch for the well known external uses of gentian violet. In infectious eczematoid dermatitis it can effectually be combined with wet applications of 1:5,000 mercury bichloride. The superimposition of wet dressings (made of old, clean turkish or hand towels) allays the discomfort of dryness, allows deeper penetration of the dye and destroys by mercury those bacteria which do not yield to gentian. I know of no more effectual means of combating that disease.

Krinsky [16] (1934) reported the utility of gentian violet in the treatment of ulcers of the leg; he sprayed the solution on repeatedly so as to allow the formation of a thick crust. Infection decreased, the area shrank, granulations appeared and healing followed. Thurmon and Chaimson [17] (1937) commend the gentian violet treatment of leg ulcers. I agree with their approval.

Reid's [18] recent essay on the treatment of ulcers is commendable and noteworthy. He stresses the concept that the cure of a wound is a problem of tissue culture and requires more than asepsis and antisepsis. One must prevent and eliminate debris and necrosis; one must immobilize; one must have good blood supply (in leg ulcers this generally implies elevation), and antiseptics must be mild. To dermatologists it is enlightening and edifying to find that surgeons are finally coming to such sensible views. They are frequently enough guilty of expecting the ingredients of

12. Ormsby, O. S.: Diseases of the Skin, ed. 4, Philadelphia, Lea & Febiger, 1934, p. 104.
13. Gomez-Vega, Paulina: Mycostatic Studies on Certain Monilia and Related Fungi, Arch. Derpat. & Syph. **32**: 49 (July) 1935.
14. Percival, G. H.: Seborrheic Dermatitis, Brit. M. J. **2**: 854 (Oct. 31) 1936.
15. Florance, F. C.: The Use of Gentian Violet (Aqueous Solution) in Skin Diseases, M. J. Australia **1**: 466 (April 4) 1936.
16. Krinsky, C. M.: Treatment of Varicose Ulcer with Gentian Violet Spray, New England J. Med. **211**: 803 (Nov. 1) 1934.
17. Thurmon, F. M., and Chaimson, Harry: Gentian Violet Treatment of Leg Ulcers: Preliminary Report, New England J. Med. **216**: 11 (Jan. 7) 1937.
18. Reid, M. R.: A Study of Wound Healing, Ann. Surg. **105**: 982 (June) 1937.

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a salve to heal the sore, whereas in truth the best the salve can possibly do is to let the tissues heal themselves. Surgeons frequently light on the time-honored dermatologic practice of applying wet dressings to ulcers instead of petrolatum mixed with assorted chemical contaminants and go to press with enthusiastic acclaim over allantoin, thiocresol, insulin [19] solutions, and what not. If one excised a circular disk of skin 2 cm. across from the shin of a healthy young athlete and promptly hospitalized him for the duration of the healing, about twenty-four days would be required for granulation and epithelization, and nothing under the sun could hasten it, but many things, indeed, could slow it down. The use of gentian violet in the treatment of ulcers is very satisfactory, for it is nonirritating and efficiently bacteriostatic and does not interfere with the proliferation of tissue cells on which the healing is absolutely dependent; if allowed to dry after repeated paintings, it forms a crust which fairly immobilizes the lesion.

In the treatment of burns, Ovens,[20] among others, has found its advantages over tannic acid to be that (1) the eschar is flexible, (2) it does not contract so much, (3) infection beneath it is easier to detect than beneath the tougher eschar of tannic acid and (4) the aqueous solution keeps indefinitely and does not require to be made up fresh.

In infections more deeply seated than impetigo and eczematoid staphylococcic disease, gentian violet has a valuable and practical use in the prevention of autoinoculation. A condition well described by the MacKennas [21] under the title "Multiple Boils in Children" (which they attribute to infection of the sweat glands for no sound reason) manifests itself as numerous, painful, red and bluish red papules and dome-shaped nodules, some of which soften and discharge thin pus; they are grouped but spread by autoinoculation, starting commonly on the back of the head or on the buttocks—a well defined clinical picture. I have treated two such examples by the repeated widespread application of gentian violet in watery solution, which promptly stopped the inoculation of new lesions while the old ones, let alone, underwent their course of absorption, or of softening, discharging and healing.

The U. S. Dispensatory,[2] twenty-first edition, quotes Klein [22] as having found gentian violet of value in the treatment of hoof and mouth disease.

Dr. Sherwin Mella, my colleague, finds it possible to stop the pustulation of a smallpox vaccination promptly by the application of gentian violet, so diminishing the scar and foreshortening the duration of discomfort. This may have significance in the management of variola, which is nowadays so rare that I have had no opportunity to test it.

The dye is commonly used by topical application, which is allowed to dry. This is effectual in most secondarily infected dermatoses and in those primary dermatitides due to gram-positive organisms. I have not seen mentioned my method of application with superimposed wet dressings (1:5,000 mercury bichloride; 1:500 aluminum acetate; 1:3,000 potassium permanganate—these are compatible; acid fuchsin [1] is not). And I have not seen previous mention of gentian violet solution used as a soak or bath, which seems greatly to enhance its penetration:

CASE 1.—Dr. K., aged 60, has had a dermatomycosis of the hands for twenty years. He used a fluoroscope in setting fractures for many years. The dermatitis, irregularly flaring with vesicles, bullae and secondary infection, while dry, fissured and scaling in the intervals, was treated by roentgen rays from 1932 to 1935. In 1935 the right hand was amputated because of roentgen necrosis and infection of the tendon sheath. The left hand, now telangiectatic and studded with keratoses, inelastic and oozing in patches, promptly vesiculates when any ointment is applied, no matter what the chemical content; I have tried many. There seems to be an actual local hypersensitivity to peruvian balsam. Wet applications including 0.25 per cent silver nitrate, 1:3,000 potassium permanganate, 1:5,000 mercury bichloride, 1:500 aluminum acetate, weak saponated solution of cresol and other soaks have been experimented with but have given no satisfaction. The feet have been treated concurrently, for fungi may be saprophytic and give little clinical evidence of their presence on the feet (especially in the nails) and yet cause disease of the hands which will not heal. I applied gentian violet by swabbing twice a day, and there was improvement. I advised the soaking of the hand in 0.5 per cent gentian violet in water for thirty minutes three times a day. This stained the entire epidermis very much more deeply and uniformly, and improvement was immediate. The soaking was discontinued after three days of energetic staining, and topical application was resumed on circumscribed areas where dermatitis and roentgen keratosis coincided. The progress toward healing is the most satisfactory the patient has experienced.

Gentian violet may be used with good effect in pruritus ani and pruritus vulvae, a fact well known to too few physicians. Itching in these locations is more commonly due to Monilia or other fungi (Epidermophyton), with superimposed medicinal and traumatic irritation, than to any other causes. I agree with Hesseltine [23] (1933), who finds that diabetes causes pruritus because dextrin encourages the growth of mycotic organisms. Plass, Hesseltine and Borts [24] have shown that monilial infestation of the vagina is commonplace, and frequently asymptomatic, and occurs in children, virgins and senile women as well as in parous ones. The disease, they found, tends to undergo spontaneous relief, but it may become chronic, with recurrent irritation over a period of months or years. Menstruation has the same temporary beneficial effect on the course of the infection as does delivery in cases associated with pregnancy. They found the local application of 1 per cent gentian violet the best treatment, although alkaline douches may help. They believed that infantile oral thrush may result from infection in the birth canal. Popoff, Ford and Cadmus [25] described a case of monilial vulvitis in pregnancy. They quoted Le Baye's summary of the types of vulvovaginal moniliasis:

1. Creamy vaginitis resembling oral thrush with painful and reddened mucosa.

2. Creamy vulvitis, with considerable discharge, not much redness or inflammation, with or without a small amount of intertrigo, which characteristically consists of small, grouped, shallow vesicopustules.

3. Ulcerative vulvitis, severe, superficially ulcerated, with pain, lymphangitis and inguinal adenitis, possibly with mycotic infection of the bladder.

19. Leyton, Nevil: Insulin in the Local Treatment of Persistent Septic Cutaneous Conditions, Brit. M. J. **1**:70 (Jan. 8) 1938. Holder, H. G., and MacKay, E. M.: The Use of Urea in the Treatment of Infected Wounds, J. A. M. A. **108**:1167-1169 (April 2) 1937.

20. Ovens, G. H. C.: Treatment of Burns, Brit. M. J. **1**:93 (Jan. 8) 1938.

21. MacKenna, R. W., and MacKenna, R. M. B.: Diseases of the Skin, ed. 4, Baltimore, William Wood & Co., 1937, p. 59.

22. Klein: Berl. tierärztl. Wchnschr., 1911.

23. Hesseltine, H. C.: Diabetic or Mycotic Vulvovaginitis: Preliminary Report, J. A. M. A. **100**:177 (Jan. 21) 1933.

24. Plass, E. D.; Hesseltine, H. C., and Borts, J. H.: Monilia Vulvovaginitis, Am. J. Obst. & Gynec. **21**:320 (March) 1931.

25. Popoff, N. W.; Ford, Francis, and Cadmus, W. H.: Mycotic Vulvovaginitis, Am. J. Obst. & Gynec. **18**:315 (Sept.) 1929.

4. Pseudoleukoplakic vulvitis, in which the mucosa is whitish and opaque, crusts are hard to remove, but no wrinkling, papillomas or hyperkeratosis exists.

5. Eczematoid vulvitis, with vesicopustular inflammation consisting of small punctiform erosions, spreading and resembling intertrigo.

6. Mycotic pruritus of the vulva, with few erosions, perhaps, and little discharge, diagnosable only by smear and culture (and by therapeutic response, I think).

7. Vesiculopustular cutaneous form, manifesting involvement principally of external teguments with small vesicopustules, the vesicular stage being brief.

8. Cutaneous intertriginous eczematous form, which is intertrigo-like, with or without Monilia in genitocrural plica, spreading to the pubis, anal region and medial surfaces of the thighs but with little visible involvement of the vulva.

I have seen forms in the male analogous to Le Blaye's types 4, 5, 6, 7 and 8 (excepting the creamy discharge, which is pus plus mucus from the cervix glands) involving the inguinal, pudendal and perianal regions. They respond to similar treatment.

I would add to Le Blaye's list, on the basis of my own observations:

9. Inconspicuous vaginitis with disseminated cutaneous involvement, patches of intertriginous dermatitis with small vesicopustules, not amenable to lasting therapeutic effects until the vaginal infestation has been treated properly.

Gentian violet tatoo, visible as a purple stain at the periphery of the scar resulting from the cautery excision of a basal cell carcinoma of the nose of a white woman, aged 79.

10. Moniliids, often consisting of patches of tiny, deep-seated vesicles, which may absorb and result in superficial scaling or which may constitute an inflamed and oozing eczematous dermatitis.

These additions cannot make a claim for originality, as study of such articles as Shelmire's [26] and Hopkins's [26a] on thrush infections and Sulzberger's [27] on fungus immunology will reveal. Flandin and his associates [28] recently reported a dyshidrosiform levuride on the hands from monilial infection of the feet. It is commonplace to cure pompholyx of the hands by treating tinea of the feet when the pompholyx is a trichophytid.[29] In a white woman, aged 55, I have cured a repetitious pompholyx-like eruption of the hands by means of douches of 1:3,000 potassium permanganate and the application of gentian violet to the genitalia, despite the absence of genital symptoms. The "-id" which I refer to, and which is often curable by the use of gentian violet on and within the female genitalia, has been accurately described, but very differently interpreted, by Adamson,[30] who considers the essential lesion of eczema, after excluding external causes of dermatitis, as consisting of circumscribed areas of small or large extent, slightly raised, a dull red and studded closely or sparsely with pinhead-sized crusts or with weeping points.

In monilial pruritus of the male or female inguinal or anal regions, and in the disseminated eruptions resulting therefrom, the removal of grease, the daily application of 2 per cent aqueous solution of gentian violet and the superimposition of 1:3,000 permanganate soaks (or sitz baths) will give speedy relief. A single, proper dose of roentgen rays will stop the itching, often within hours; but it will not cure the condition, nor will repetitions of it, for it does not attack the cause, while gentian violet does.

Bland, Rakoff and Pincus [31] did not report the method of alleviating the monilial infections that they produced in women experimentally. It will be interesting to learn with what means they obtained cures in one week. Hesseltine [32] has recently reported an effectual method of treating monilial vulvovaginitis. Plass,[24] he wrote, recommended from 1 to 2 per cent gentian violet applied from three to six times a week; he [32] found, however, that iodine is more effective. Taking advantage of the fact that iodine is liberated from a mixture of potassium iodide and potassium iodate in the acid vaginal secretion, he dispenses gelatin capsules of size 00 or 000, each containing 0.125 Gm. of a mixture of 8 moles of potassium iodide to 1 of iodate in sufficient kaolin to fill the capsule. The kaolin must be treated with ammonia before incorporation in order to prevent its acidity from causing premature reaction. Kaolin acts as a diluent preventing vaginal irritation. In addition to ordering two capsules to be placed in the vagina each night, Hesseltine paints the areas with one-fourth strength compound tincture of iodine once a week. He states that he has had cures in a few days or weeks, whether the patient is pregnant or not.

Plass, Hesseltine and Borts [24] demonstrated in seven infected women who delivered babies with thrush, the same organism in each mother and child. As Sulzberger,[33] Foerster [34] and others have pointed out, one class of infantile eczema is mycotic. It is, I believe, exceedingly probable that these cases, in which the "eczema" occurs in deep red, circular and oval, circumscribed but coalescing patches of oozing dermatitis, are due to infection with monilia in the birth canal. These differ distinctly from cases due to contact dermatitis (especially wool, silk, oils and soap) and from those classic cases of infantile eczema wherein the cheeks and extensor surfaces of the extremities are the sites of predilection. I have treated patients with infantile mycotic dermatitis with great benefit by the widespread application of the aqueous solution of gentian violet, for it is efficient in moniliasis, nonirritating and nontoxic. I suggest the prevention of such infantile disease by treating asymptomatic monilial vaginitis in pregnant women before parturition by means of gentian violet and permanganate douches, or in any other way that is effectual.

26. Shelmire, Bedford: Thrush Infections of the Skin, Arch. Dermat. & Syph. **12**: 789 (Dec.) 1925.

26 (a). Hopkins, J. G.: Moniliasis and Moniliids, Arch. Dermat. & Syph. **25**: 599-615 (April) 1932.

27. Sulzberger, M. B.: Immunologic Grouping of Trichophytons and Monilia, J. Immunol. **23**: 73 (July) 1932.

28. Flandin, C.; Raibeau, H., and Guerra, P.: Levurides dyshidrosiformes des mains consécutives à mycose interdigito-plantaire à levures; intradermo-réactions, Bull. Soc. franç. de dermat. et de syph. **43**: 462 (Feb. 13) 1936.

29. William, C. M.: Trichophytid of the Hands, Arch. Dermat. & Syph. **27**: 973 (June) 1933.

30. Adamson, H. G.: Eczema as a Clinical Entity, Its Fundamental or Essential Lesion, Brit. J. Dermat. & Syph. **46**: 515 (Dec.) 1934.

31. Bland, P. B.; Rakoff, A. E., and Pincus, I. V.: Experimental Vaginal and Cutaneous Moniliasis, Arch. Dermat. & Syph. **36**: 760 (Oct.) 1937.

32. Hesseltine, H. C.: Biologic and Clinical Import of Vulvovaginal Mycoses, Am. J. Obst. & Gynec. **34**: 855 (Nov.) 1937.

33. Sulzberger, M. B.: Allergy in Dermatology, J. Allergy **7**: 385 (May) 1936.

34. Foerster, H. A.: Infantile Eczema, J. Oklahoma M. A. **30**: 260 (July) 1937.

Impetigo or "pemphigus" of the newborn, as Cole and Ruh [35] observed in 1914, is a staphylococcic infection, and in its treatment "ointments are worse than useless, serving only to help spread the disease." They recommended astringent agents and dusting powders, a plan of treatment the wisdom of which has been fully borne out by the experience of Swendson and Lee,[36] who used silver nitrate and a dusting powder; by that of Carter and Osborn,[37] who introduced strong silver nitrate solution into each bulla as it appeared and condemned ointments, and by that of Bowman,[38] who used 3 per cent solution of mercurochrome because it is less caustic. Gentian violet solution should here be ideal. It stops autoinoculation in infectious eczematoid dermatitis,[39] the identical disease in adults, different only because of the absence of papillae in the dermis of the infant. Gentian violet could easily be used as a bath in the treatment of this condition, and 1:500 dilution would stain the epidermis sufficiently.

Veld sore, as described by Harman [40] (1904), is in my opinion infectious eczematoid dermatitis, for it starts in a scratch, spreads with herpetoid lesions, is caused by staphylococci and is not benefited by any greasy application. It could be treated effectively with gentian violet.

It is correct to distinguish between staphylococcic and streptococcic bullous dermatitis, I think, as Tachau [41] does. Impetigo, a name properly attached to the streptococcic disease, is characterized by thin walled vesicles; infectious eczematoid dermatitis, the staphylococcic disease, presents thicker walled, more deeply seated lesions which tend to become pustular and which are often associated with follicular and furuncular elements. The early blister in either case contains clear fluid. The treatment is similar, although impetigo generally yields more readily, being more superficial.

Ormsby,[42] describing the utility of naftalan, permanganate and other drugs in the treatment of yeast and contact dermatoses, has reported gentian violet valuable in the therapy of anogenital and oral thrush, intertrigo and mycotic paronychia.

Gentian violet may be used in ointments. The saturated aqueous solution can be incorporated in any vehicle that will take up water, such as hydrous wool fat. I have found ointment preparations generally unsatisfactory. The dried, greaseless surface after application of the aqueous solution is commonly, as in impetigo, decidedly advantageous. The ointment suffers severely from the objection of messiness, for a dry surface does not stain when touched, but the ointment stains always.

There is, in addition to its mere unsightliness, a contraindication to the use of gentian violet. Case 2 and the accompanying illustration show that it may tattoo the skin with considerable permanence. This observation has not previously been reported, so far as I know.

CASE 2.—Mrs. L. R., aged 79, white, seen Aug. 6, 1937, had a basal cell carcinoma involving the bridge of the nose and the right lower eyelid. It had first been noticed twenty years previously and had been "burned" several times. I excised it with the pointed cautery with a margin of normal tissue laterally, peeling the skin and thin subcutaneous tissues from the cartilage and nasal bones beneath. The wound was painted with 2 per cent aqueous solution of gentian violet. It was dressed with white petrolatum each day by the patient or by one of her family, and I saw her once a week. By August 27 the burned tissue had sloughed off and granulation was well along, but the edges were thickened, red and tender. I applied gentian violet solution as before. When I saw the lesion September 10 it had healed and consisted of a sound scar but was stained purple, especially at the edge. The color extends into the tissue adjacent to the scar, where, presumably, it was carried by phagocytes after it had been applied to the infected wound. The purple color has faded only a little in eight months.

This case is one of two I have seen in which the application of gentian violet resulted in tattooing. If the dye is applied before the burned tissue sloughs, it is carried away in the sloughing. If it is applied to the granulations, it is liable to tattoo more or less permanently, although this must be quite unusual. It is therefore not advisable to apply gentian violet to ulcerative lesions of the face. This does not include impetigo, the lesions of which are superficial and heal without scar. While I [43] have observed tattooing of impetiginized areas resulting from the application of an iron salt, I have not seen tattooing produced by gentian violet in many cases of impetigo contagiosa. Here, too, circumstances must be exceptional when tattooing is to result, but as yet I do not know what they are.[44]

SUMMARY

1. Gentian violet, a mixture of pentamethylpararosaniline chloride and hexamethylpararosaniline chloride, is a medicine of great value in the topical treatment of those external diseases wherein gram-positive bacteria play a part. It is a rich purple dye, available inexpensively in crystalline form, soluble in water, alcohol and chloroform and insoluble in petroleum fractions.

2. Gentian violet is nontoxic and safe to use in local application by swab, soak or bath and on the skin or mucous membranes, and it is notably nonirritating. It has been reported nontoxic in doses of less than 5 mg. per kilogram of body weight when given intravenously to the human being and curative in cases of staphylococcic septicemia.

3. Gentian violet is actively and selectively bacteriocidal or bacteriostatic to gram-positive microorganisms, which include Staphylococcus aureus, the gonococcus and diphtheria bacillus; to Monilia and, to a less extent, to Trichophyton, Epidermophyton, Saccharomyces and Torula. It possesses this property both in vitro and in clinical use.

4. It discolors clothing, skin and linens but can be removed by repeated washings with water and alcohol or can be bleached with chlorine. Its usefulness commonly, although of course not invariably, outweighs the disadvantage of its conspicuous color.

5. Gentian violet in aqueous solution is not irritating; I have not found described nor have I witnessed hypersensitive reactions to its presence on the skin. In alcoholic solution, the alcohol is irritant; alcoholic solutions have very little usefulness on this account. The incorporation of the dye in a salve offers very few

35. Cole, H. N., and Ruh, H. O.: Pemphigoid of the Newborn (Pemphigus Neonatorum), J. A. M. A. **63:** 1159 (Oct. 3) 1914.
36. Swendson, J. J., and Lee, S. R.: Impetigo Contagiosa Neonatorum, with a Report of Four Epidemics, J. A. M. A. **96:** 2081 (June 20) 1931.
37. Carter, H., and Osborn, H. A.: Neonatal Dermatitis, Brit. M. J. **1:** 465 (March 7) 1936.
38. Bowman, A. K.: Pemphigus Neonatorum, Brit. J. Dermat. & Syph. **48:** 484 (Oct.) 1936.
39. Engman, M. F., Sr.: An Infectious Form of an Eczematoid Dermatitis, Am. Med. **4:** 769 (Nov. 15) 1902.
40. Harman, N. B.: The Clinical and Pathologic Character of Veld Sore Prevalent Among Troops in South Africa, J. Path. **9:** 1, 1904.
41. Tachau, P.: The Bacteriology of Impetigo Contagiosa, Brit. J. Dermat. & Syph. **50:** 113-118 (March) 1938.
42. Ormsby, O. S.: Yeast Dermatoses: Contact Dermatitis, J. Michigan M. Soc. **37:** 135-140 (Feb.) 1938.
43. Sutton, R. L., Jr.: Pigmentation of the Skin Due to Iron (Copperas) Applied Locally, J. A. M. A. **108:** 112 (Jan. 9) 1937.
44. The possibility that this discoloration might be the result of infection with B. violaceus, as observed by Black and Shahan in THE JOURNAL (April 16, 1938, p. 1270), might be entertained. I have not seen what they described; no cultures were made in my case.

advantages and several disadvantages and is commonly, although not invariably, an unsatisfactory method of use. The aqueous solution, 1 or 2 per cent for topical application and from 0.1 to 0.5 per cent for soaks or baths, is the most practicable way to use it.

6. I have found it valuable in the treatment of monilial infections, especially pruritus vulvae and pruritus ani of this origin and the cutaneous eruptions dependent on them; of impetigo, infectious eczematoid dermatitis, infantile furunculosis and secondarily infected eczema, infantile or adult; of Vincent's angina, leg ulcers and ulcers following third degree burns, and of recurrent dermatomycoses, including tinea of the hands and feet. Others have attested its usefulness in foot and mouth disease and vaccinia, as well as in most of those conditions which I quote from my experience.

7. It is urged on the grounds of reason and analogy that gentian violet be tried and assessed in the treatment of pemphigus neonatorum (impetigo, or exfoliative dermatitis of the newborn) and diphtheria of the skin and in the control of pustulation in smallpox and of mycotic infantile eczema.

8. It may be possible to prevent all cases of mycotic infantile eczema that result from infection in the birth canal by the proper antepartum treatment of symptomatic or asymptomatic monilial vulvovaginitis.

9. Gentian violet has been observed to produce tattoo when applied to a deep burn on the face.

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THE FEMALE PERINEUM

EPISIOTOMY AND A TECHNIC FOR ITS REPAIR

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By the term perineum is meant all those structures, or anatomic soft parts, which correspond to the inferior aperture or outlet of the pelvis.

With the marked increase in the percentage of hospital deliveries and in the use of obstetric analgesia during the past decade, surgical incision of these soft parts (episiotomy) during labor has become a common practice by even the most unskilled accoucheurs.

Unfortunately this operation, one of the niceties of obstetric art, is often accomplished with such little regard for either the manner of incision or the technic of repair that the outcome is frequently as undesirable as that which is often observed when no such intervention is attempted. It is not surprising, therefore, that among obstetricians there is a growing sentiment that this is the most abused of obstetric procedures.

On those of us to whom is entrusted the teaching of obstetrics there falls a not altogether undeserved criticism for these unfavorable results, since too often our textbooks, our lectures and our clinical demonstrations omit the details of anatomy and technic which the novice requires. The desire for this instruction may be discerned in the multitude of questions concerning the procedure and the structures involved, which, in both classroom and delivery room, are asked by the inexperienced, students, interns and practitioners alike.

Such repeated requests for detailed information have been, more than anything else, the incentive for this presentation.

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The argument that such operative intervention is not safe in the hands of the average obstetric attendant does not alter the fact that it is the general practitioner who delivers the large majority of expectant mothers. I most heartily subscribe, therefore, to the dictum of my friend and early teacher, Arthur H. Bill,[1] that "we must stop lowering our standards to the level of the untrained man and must begin to think of training men to do the things which we consider ideal."

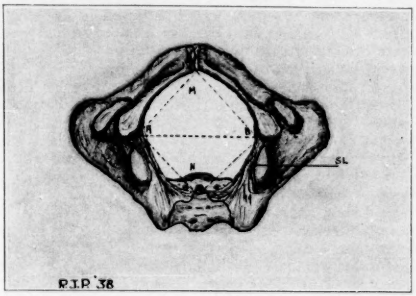

Fig. 1.—The female outlet seen from below: *AB*, the transverse (bisischial) diameter; *M*, the urogenital triangle; *N*, the anal triangle; *SL*, the sacrotuberous ligament.

However, no mere word description of the subject of perineal incision becomes immediately lucid without first a consideration of the chief anatomic features with which the procedure has to deal. First of these is the outlet of the bony pelvis itself (fig. 1).

As originally suggested by Klein,[2] this may be divided into two triangles (*M* and *N*) which have a common base, the bisischial diameter of the outlet (*AB*) joining the widest parts of the ischial tuberosities. This imaginary line traverses the perineum just anterior to the anus.[3] The apex of the anterior or urogenital triangle (*M*) is formed by the subpubic ligament, while its sides are formed by the ischiopubic rami. The poste-

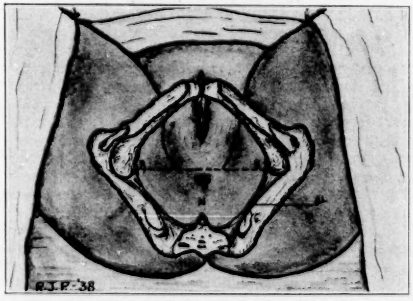

Fig. 2.—Diagram to show the relation of the bony pelvic outlet to the female perineum (seen from below).

1. Bill, A. H.: Analgesia and Anesthesia and Their Bearing upon the Problem of Shortened Labor, Am. J. Obst. & Gynec. **34**: 868-881 (Nov.) 1937 (discussion p. 881).
2. Klein, R.: Eine neue Methode der Beckenausgangsmessung, Monatschr. f. Geburtsh. u. Gynäk. **2**: 165-184, 1895.
3. Pieri, R. J.: Funnel Pelvis, Its Incidence and Importance, and a New Pelvimeter for Outlet Mensuration, Surg., Gynec. & Obst. **59**: 891-898 (Dec.) 1934.

rior or rectal triangle (*N*) is bounded laterally by lines from the extremities of the transverse diameter (*AB*) to the sacrococcygeal joint, which forms the apex. The boundaries of these two figures offer considerable difference, physiologically, in that the anterior triangle possesses for its sides rigid, nonyielding bony barriers, while the sides of the posterior triangle are soft, yielding structures, as the various muscles and fasciae about to be described, and the sacrotuberous ligaments (*SL*).

The various relations between the transverse diameter of the outlet and the triangles just described can better be visualized by figure 2, in which the vulva, perineum and anus, as well as the bony structures, are depicted. Here the importance to the accoucheur of accurate knowledge of the underlying anatomic structures becomes more manifest.

The first step in the study of these structures consists in the removal of the skin and the superficial layer of the superficial fascia (panniculus adiposus), which are identical with the integument and the panniculus found elsewhere in the body (fig. 3). It will now be disclosed that *AB*, the imaginary line denoting the bisischial diameter, corresponds rather closely to an ana-

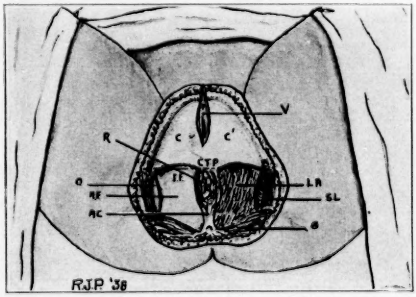

Fig. 3.—Dissection of the female perineum (after Beck). The skin and superficial fascia have been removed. *V*, the vestibule; *CC'*, Colles' fascia covering the urogenital triangle; *CTP*, central tendon of perineum (perineal body); *R*, anus surrounded by external sphincter; *AF*, ischiorectal fossa; *IF*, inferior fascia of pelvic diaphragm (anal fascia). On the left this has been removed to show *LA*, levator ani muscle; *O*, obturator internus fascia; *AC*, anococcygeal body; *SL*, sacrotuberous ligament; *G*, gluteus maximus muscle.

tomic division between the anterior (urogenital) and the posterior (anal) triangles of the outlet. The anterior triangle is found covered by a fairly dense fascia (Colles' fascia), which is the deep layer of superficial fascia attached laterally to the rami of the pubes and ischia. It is continuous anteriorly and cephalad with the deep layer of the superficial abdominal fascia (Scarpa's fascia) and laterally with the deep superficial fascia of the thigh. Posteriorly, and corresponding generally with the transverse diameter of the outlet, it fuses with the posterior limits of the so-called triangular ligament (urogenital trigon).

In this dissection it will be seen that the anal triangle (*N*) has no such structure as that described as Colles' fascia and that removal of the superficial fat in this region discloses (fig. 3) the external rectal sphincter, the anococcygeal body, the ischiorectal fossae and the inferior fascia of the pelvic diaphragm (anal fascia), which covers the inferior aspect of the levator muscles. The gluteus fibers usually encountered in this dissection have no obstetric significance.

It is important at this point to become cognizant of the fact that in both their anatomic features and their function the anterior (urogenital) triangle differs markedly from the posterior (anal). Careful dissection of the anterior triangle discloses that it is composed of various perineal compartments arranged in layers (fig. 4), the most superficial (inferior) of which is opened

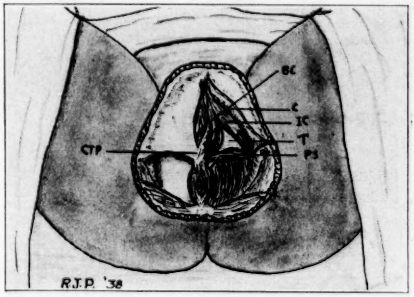

Fig. 4.—Dissection of the anterior (urogenital) triangle: *C*, Colles' fascia reflected to show the muscles of the left superficial perineal compartment; *BC*, bulbocavernosus; *IC*, ischiocavernosus; *PS*, superficial transverse perineal; *T*, inferior fascia (floor) of deep compartment (urogenital diaphragm, urogenital trigon, or triangular ligament).

by reflecting Colles' fascia laterally. This exposes to view the ischiocavernosus, bulbocavernosus (constrictor cunni) and the superficial transverse perineal muscles.

The former arises on the mesial surface of the ischial ramus, passes anteriorly and medially and becomes inserted on its own side into the fascia of the inferior surface of the clitoris.

The bulbocavernosus (constrictor cunni, or sphincter vaginae) arises in the central tendon of the perineum (*CTP*), passes anteriorly, lateral to the vagina, and is inserted into the fibrous sheath of the clitoris.

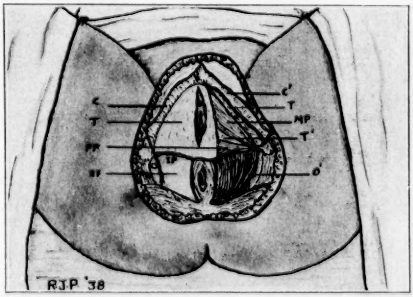

Fig. 5.—Further dissection of the urogenital triangle: *CC'*, Colles' fascia has been reflected and the contents of the superficial compartment removed. On the left *T*, the inferior fascia of the urogenital diaphragm has been reflected to show the muscles of the deep perineal compartment. *MP*, sphincter muscle of the membranous urethra. *PP*, deep transverse perineal muscle. *T'*, superior fascia (roof) of urogenital diaphragm. In the posterior (anal) triangle the obturator fascia (*O*) has been removed on the left, showing the underlying fibers (*O'*) of the obturator internus.

The superficial transverse perineal muscle takes origin from the ischial tuberosity and extends medially across the superficial perineal compartment or space to its insertion into the central tendon of the perineum.

The roof of the compartment thus dissected can be discerned (fig. 4 *T*) as the inferior of two layers of a thin fascia which enclose the so-called deep perineal compartment (the urogenital diaphragm, triangular ligament or urogenital trigon).

Deeper dissection, with reflection of all the structures of the superficial compartment and the inferior layer of fascia (floor) of the urogenital diaphragm (fig. 5), reveals the contents of the deep compartment.

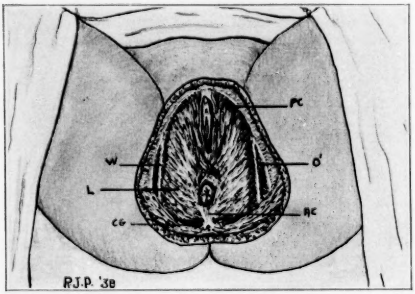

Fig. 6.—The levatores ani (pelvic diaphragm) seen from below. The inferior (anal) fascia has been removed. *PC*, pubococcygeus fibers; *L*, ileococcygeal portion; *CG*, coccygeus muscle; *W*, the "white line."

Arising from the ischial ramus laterally and extending medially across the deep perineal interspace, the deep transverse perineal muscle (*PP*) becomes inserted into the central portion of the perineal body.

From the ischiopubic ramus the sphincter muscle of the membranous urethra (*MP*) passes anteromedially to join its fellow of the opposite side, some fibers surrounding the urethra while others are attached to the lateral walls of the vagina.

The roof of the deep perineal compartment (*T'*), as previously indicated, is the superior fascia of the triangular ligament. This "ligament," or diaphragm, is the

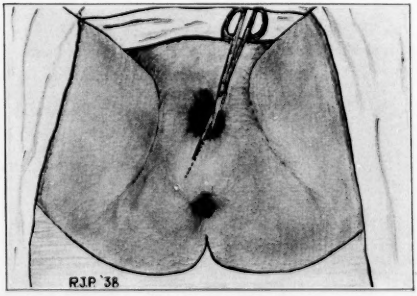

Fig. 7.—Right mediolateral episiotomy.

continuation of the obturator fascia which crosses the anterior triangle of the pelvic outlet. Laterally its two layers are attached to the ischiopubic rami. Posteriorly, and roughly coinciding with the bisischial line, they fuse with each other and with Colles' fascia. In the midline the various compartments described (figs. 3, 4 and 5) are perforated by the urethra and vagina.

The ischiorectal fossae (*IF*) extend anteriorly from the posterior (anal) triangle between the superior fascia of the urogenital diaphragm and the inferior levator (anal) fascia. Thus the superior fascia of the urogenital trigon forms also the floor of the anterior extensions of the ischiorectal fossae, while the roof is formed by the anal fascia (inferior layer of the pelvic fascia).

At this point it might be well to describe briefly the various planes of the pelvic fascia. The anal fascia covering the inferior surface of the levator ani is the inferior of two layers of fascia (the pelvic fascia). The upper layer covers the superior surface of the pelvic diaphragm (levator ani). Laterally on each side, and corresponding closely to the origin of the levator muscle, both layers of this pelvic or diaphragmatic fascia fuse with the fascia which covers the inner surface of the obturator internus. The ridge so formed is called the arcus tendineus of the levator ani, or the "white line." Shortly below (medial to) this line the layer of fascia on top of the levator ani (superior layer of levator fascia) thickens to form a bandlike base or

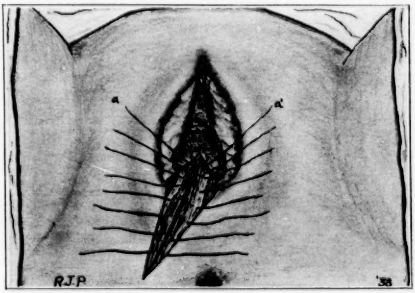

Fig. 8.—First layer of sutures. (The placenta has been delivered.) The first stitch (submucous) is passed widely around the upper angle (*aa'*).

ridge of fascia, the tela endopelvina,[4] or main sheet of visceral fascia,[5] which gives off four layers, one going to the bladder, a second between the bladder and the vagina, a third between the vagina and the rectum and the fourth posterior to the rectum. The proper support of the pelvic viscera depends on the integrity of these fascial layers as well as on the integrity of the muscles.

Removal of the various structures which comprise the urogenital trigon and of the inferior levator (anal) fascia discloses (fig. 6) the arrangement of the fibers of this most important paired muscle, the pelvic diaphragm. For purposes of description as well as anatomically two parts of each levator are visualized. The first portion (pubococcygeus) arises slightly external to the symphysis and from 3 to 4 cm. below the pelvic brim. These fibers (fig. 6 *PC*) pass directly backward, lateral to the vagina, some decussating in the perineal body (a point disputed by some), others mingling with the longitudinal fibers of the vaginal wall, still others

4. Tandler, J.: Handbuch der Gynäkologie (Stoeckel), Munich, J. F. Bergmann, 1930, volume 1, first half, p. 342.

5. Sears, N. P.: Fascia Surrounding Vagina, Its Origin and Arrangement, Am. J. Obst. & Gynec. **25**: 484-492 (April) 1933; Further Studies of Fascial Planes Surrounding Vagina, ibid. **26**: 614-620 (Oct.) 1933; Pelvic Fascia; Histologic Structure of Planes of Tissue Used in "Fascia Overlapping" Operation: Attempt to Correlate Conflicting Views, ibid. **29**: 834-839 (June) 1935.

ending in intimate relation with the fibers of the external sphincter, while the remainder join with those of the opposite side posterior to the rectum (anococcygeal body) prior to their insertion in the coccyx.

The second (lateral) portion of the levator (ileococcygeal portion) may be seen arising from the "white line" of the tendinous arch, which extends downward and backward to the ischial spine, where it is about 5 cm. below the plane of the inlet. The greater portion of these fasciculi pass downward and backward, some joining fibers from the opposite side, others becoming inserted in the anococcygeal body (fig. 6 *AC*) and the remainder into the lateral margins of the coccyx. Posterior to the levator closure of the aperture of the outlet is completed by the coccygeus and to some extent the piriformis muscle, neither of which is of great obstetric significance.

Thus the conformation of the pelvic floor assumes somewhat the shape of a trough, closed behind (anococcygeal body) and open in front (vagina). The function of this V shaped arrangement of structures, aside from its mechanism in giving support to various viscera, becomes manifest during childbirth, as it guides the

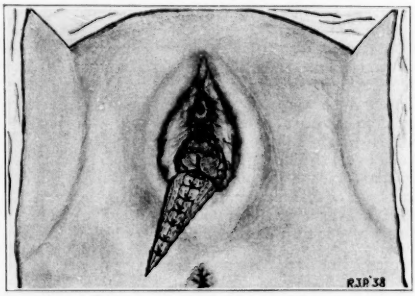

Fig. 9.—First layer of sutures tied and cut.

presenting part along the path of least resistance by way of the vagina through the pelvic outlet and into the outside world.

That portion of the perineum which lies between the vagina and the anus is termed the perineal body (fig. 3 *CTP*). It is composed, as earlier disclosed, of the various perineal muscles, which are joined at this point, and of their various fascial investments. During pregnancy, through vascular and other changes, the perineal body as well as the entire floor of the perineum projects from 2 to 4 cm. below the customary level of the nonpregnant state.

As a result of excessive strain during labor, overstretching or laceration of the muscles of the perineum frequently occurs. This is invariably accompanied by single or multiple tears in one or more of the various layers of pelvic fascia, which in many places is in such intimate relation to the perineum as to be considered a part of it. These injuries, by weakening the support of the pelvic organs, constitute one of the chief factors in the production of such sequelae as cystocele and rectocele.

By episiotomy is meant the operation whereby the perineum is incised during delivery to prevent laceration of the soft parts at the pelvic outlet. It merely substitutes "a clean cut of definite size in a place where it can do the least harm for a ragged tear of indefinite size in a place where it may cause immediate danger and subsequent injury."[6] Strictly speaking, any such incision of the perineum may be termed episiotomy, whether lateral or bilateral, mediolateral or central. The lateral incisions have fallen more or less into disfavor. By popular usage the term episiotomy has

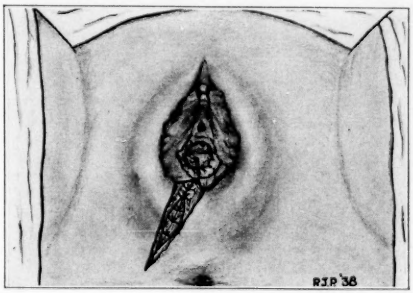

Fig. 10.—The second layer of sutures includes the deep superficial fascia. The "crown" stitch (buried) includes the bulbocavernosus fibers.

come to signify an incision of the vulvar ring directed away from the sphincter ani (mediolateral episiotomy), to distinguish it from "perineotomy," or central episiotomy, an incision along the central raphe and directed toward the sphincter.

As an obstetric procedure it is nothing new, since it is recorded that the vulva was incised by Ould in 1742. In the years that followed, Michaelis (1810), and subsequently Ritgen, Schultz, Scanzoni, Colpe and Credé, in as many variations of technic as there were

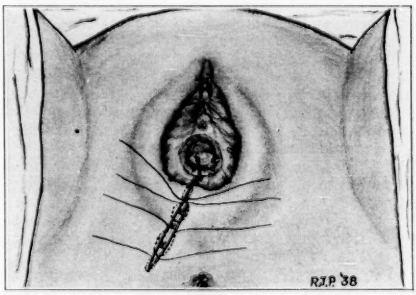

Fig. 11.—Subcuticular interrupted sutures close the skin.

accoucheurs, made one or several incisions to secure the additional space needed for delivery. It is not clear whether these outstanding early protagonists repaired their incisions or left them to nature. Anesthesia during childbirth was not then the vogue.

After 1918, when Pomeroy[7] presented a paper on the subject, episiotomy gained increasing favor among the profession, particularly after many other leading

6. Cameron, J. C.: An American Text-Book of Obstetrics, Philadelphia, W. B. Saunders Company, 1895.
7. Pomeroy, R. H.: Shall We Cut and Reconstruct the Perineum for Every Primipara? Am. J. Obst. **78**: 211-220 (Aug.) 1918.

authorities, notably De Lee,[8] emphasized the advantages of the operation both to the baby and to the mother. The indications and contraindications have been enumerated by Schauta,[9] Anspach,[10] Berlind,[11] Galloway,[12] Taylor [13] and others and are beyond the scope of this paper. However, expressed in a few words, the advantages to the baby lie chiefly in the shortened period of

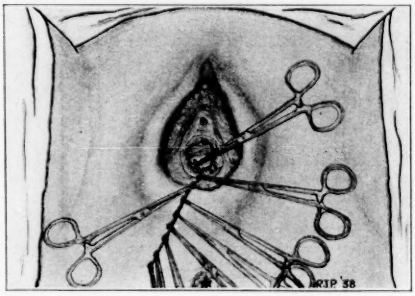

Fig. 12.—Allis clamps are used to seal the edges of the incision.

pounding of the fetal head on the perineum and the consequent reduction in the incidence of cerebral injury. As for the mother, the second stage is shortened, while the restoration of the pelvic floor after episiotomy properly performed is usually better than is observed even after many normal deliveries in which no visible lacerations occur, the integrity of the soft parts remaining often as unimpaired as in their nulliparous state.

The technic of the incision is simple. In the absence of any indication for earlier intervention delivery is not attempted until the presenting part is on the levators and there is evidence of pressure on the vulvar outlet. This is recognized both by some bulging of the perineum and by a beginning distortion of the anus.

After the usual preparation for delivery the bladder is catheterized and the perineum gently "ironed out" with the liberal use of neutral liquid soap. Care should be exercised here to avoid overstretching of the parts and too rapid dilation. The former causes future loss of muscle tone and damage to the fascia, while the latter favors laceration.

The site of incision depends on the operator, the right or left mediolateral episiotomy being favored by most accoucheurs chiefly because it avoids the rectum. The point of direction extends from the midpoint of the posterior aspect of the vaginal orifice and proceeds along a line midway between the sphincter and the ischial tuberosity (fig. 7). This is best accomplished by means of sharp scissors, the angle of the blades being placed at the middle point of the fourchette, the inner blade inserted between the presenting part and the parts to be incised. The external blade demarcates the direction and extent of the incision, which is usually accomplished by a single quick motion. Grasping the parts between the thumb and forefinger facilitates an accurate incision. With the operator seated during delivery, as is the custom with me, the right-sided incision is the most easily accomplished. The particular structures severed by the episiotomy depends on the length of the incision. At times, as recommended by Dührssen in pathologic cases, even the ischiorectal fossae are involved. Ordinarily, however, one severs the skin, Colles' fascia, the bulbocavernosus, the transversus perinei, the urogenital septum and the median fibers of the pubococcygeus portion of the levator ani.

Following delivery, which usually shortly succeeds the episiotomy, bleeding ceases. If persistent, hemorrhage is easily checked by means of a firm tampon until sutures are applied. Delivery of the placenta is to be preferred before the repair is begun in order that a vaginal sponge, inserted high in the birth canal, may assist in keeping the field clear and because the placenta, by its bulky size, may cause damage if delivered after suturing is completed. Any suitable retractor may be used for exposure if desired.

Ordinarily on inspection of the incision the details of individual anatomic structures are not recognized, except for muscle tissue and Colles' fascia, which is usually found retracted under the integument and superficial panniculus. More accurate identification of layers is unnecessary.

The technic of repair about to be described has seemed to me to offer certain advantages over other methods which I have employed in that it follows certain established surgical principles [14] and causes a minimum amount of postoperative discomfort. All sutures are of fine texture, my opinion coinciding with that of Harvey [15] that it is never necessary to use any suture stronger than the tissue through which it passes.

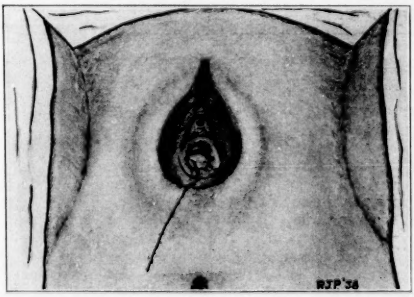

Fig. 13.—Removal of the Allis clamps leaves a fine linear scar.

Single sutures are preferred to double sutures, since the difference in their holding strength is practically negligible.

The first layer of sutures, therefore, is interrupted (chromic No. 1), passed widely to reduce tension on the line of healing and tied just securely enough to secure coaptation. Care is observed, of course, to avoid perforation of the rectum. The first stitch (fig. 8 *aa'*) is submucous and is passed in circular fashion around

8. De Lee, J. B.: Principles and Practice of Obstetrics, ed. 5, Philadelphia, W. B. Saunders Company, 1929.
9. Schauta, Friedrich: Lehrbuch der gesamten Gynäkologie: Eine Darstellung der physiologischen Funktionen und der Funktionsstörungen der weiblichen Sexualorgane im schwangeren und nichtschwangeren Zustande, part I, Geburtshilfe, ed. 3, Leipzig and Vienna, F. Deuticke, 1906, p. 715.
10. Anspach, B. M.: Value of a More Frequent Employment of Episiotomy in the Second Stage of Labor, Am. J. Obst. **72**: 711-714, 1915.
11. Berlind, M. M.: Episiotomy in Prematurity as Prevention Against Cerebral Hemorrhage, M. J. & Rec. **135**: 180-182 (Feb.) 1932.
12. Galloway, E. C.: Management of Vertex Presentation by Episiotomy and Outlet Forceps, Illinois M. J. **67**: 526-529 (June) 1935.
13. Taylor, C. H., Jr.: Indications and Technic of Episiotomy, Am. J. Surg. **35**: 403-408 (Feb.) 1937.
14. Hess, O. W.: The Use of Catgut in the Perineum, Surg., Gynec. & Obst. **63**: 308-314 (Sept.) 1936.
15. Harvey, C. S.: Concerning the Suture, Surg., Gynec. & Obst. **58**: 791-793 (April) 1934.

the upper angle of the incision. This brings together any fibers of muscle or fascia which might have separated under the mucosa. Neglect in this detail favors subsequent "pouching" of the posterior vaginal wall, or even a later rectocele, if such an occult separation exists.

The second layer of sutures (fig. 10) includes the fascia of Colles. No. 0 chromic gut is selected here because of its ample holding strength (8 pounds) in fascia.[16] It is at this time that the "crown" stitch is inserted, bringing together the severed portions of the hymen, the needle being inserted obliquely upward in the base of the labia minora to secure in its grasp the retracted fibers of the severed constrictor cunni (bulbocavernosus) muscle. To overcome this retraction and to prevent gaping of the vagina, two such sutures may be required. To avoid "dead space" any muscle underlying the fascia is included in the bite of the needle as it is passed from one side to the other.

When completed the second layer usually brings into apposition the edges of both the mucosa and the skin respectively. Frequently, however, to insure this a third (subcuticular) layer of 00 or 000 catgut (fig. 11) is placed, a fine skin needle being used. No sutures are passed through either vaginal mucosa or skin, those portals of entry which invite pathogenic organisms from without to follow the suture into the tissues below thus being eliminated.

As a final step the line of incision is effectively sealed by gentle coaptation of its everted edges by means of Allis clamps (fig. 12). A dozen of these instruments are ready for use in each case. These are applied and permitted to remain clamped for only a few moments while the vaginal pack is removed, any blood clots are expressed and preparations are completed for the transfer of the patient to her bed. Removal of the clamps leaves a fine linear scar, which for a brief interval remains elevated as the result of the eversion and then becomes almost imperceptible as the elevation recedes. It is surprising how apposition of the cut edges of the wound in this manner makes adherence quite effective and renders unnecessary even the use of skin clips, as recommended by Mathieu,[17] the objection to clips being their discomfort and the necessity of their removal several days later.

In the early cases in which repair was done in the manner described there was occasionally encountered a repair in which a small area of separation of the edges of the skin developed at the lower angle. This was overcome by passing the subcuticular suture at this point widely around the angle (fig. 11).

While inferences are not always accurate, the results of repairs following this technic have been gratifying. There has seemed to be much less discomfort to the patient, and no case of infection or "breaking down" of the perineum has been observed in the present series of more than 400 cases.

SUMMARY AND CONCLUSIONS

1. There has been a great increase in the frequency of the operation of episiotomy by the general practitioner.

2. Owing in a large measure to inadequate instruction of physicians, the end results of many such operations are disappointing.

3. The technic described is simple, is easily acquired by interns and residents in an active hospital obstetric service [18] and has seemed to possess certain advantages over other methods that I have employed.

304 Medical Arts Building.

16. Howes, E. L., and Harvey, S. C.: Tissue Response to Catgut Absorption, Silk, and Wound Healing; Correlation with Tensile Strength, Internat. J. Med. & Surg. **43**: 225-230 (April) 1930.

17. Mathieu, Albert: Episiotomy, West. J. Surg. **40**: 330-336 (June) 1932.

18. The obstetric division of the Syracuse Memorial Hospital.

THE NEED OF REDETERMINING SCHICK NEGATIVENESS IN SCHOOL CHILDREN

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AND
F. R. JANNEY, M.D.
MILWAUKEE

Diphtheria morbidity and mortality in the United States has been enviably low in the past ten years.[1] Furthermore, there has been, as pointed out by Jordan,[2] a naturally declining trend in diphtheria since 1895. The low incidence of clinical diphtheria makes it all the more important to maintain the Schick immunity of the large school population, since it has been shown by Dudley [3] and others that the duration of the immunity depends a great deal on natural restimulation of the immune response by exposure to diphtheria environment. In the comparatively diphtheria free environment of American cities this restimulation of the immune response is absent, and therefore one might expect a relapse of immunity to occur more frequently.

During the years 1929 and 1930 we [4] reported the successful use of toxoid as an immunizing agent in the preschool child. In a recent retesting of 145 of those children who had received toxoid and had shown a negative Schick test six or seven years previously, 22 per cent showed a reversion to a positive Schick test. Fraser and Halpern [5] at the University of Toronto have recently called attention to a similar occurrence. One third of the children retested by them had lost their immunity within five years.

The recent report of Park [6] suggests that a large number of reversions to a positive Schick test may be expected following one dose alum toxoid.

During the last year or two there has been an apparent increase in the incidence of diphtheria among supposedly Schick negative children. These occurrences warrant serious consideration of the present status of Schick immunity in our large school population.

As it is now the practice to immunize against diphtheria at about 9 months of age and to perform a Schick test within the following several months, many school children have had an interval of five years or more following the immunization procedure by the time they enter school.

The importance of a Schick test following the immunization procedure has been repeatedly empha-

From the Department of Preventive Medicine, Marquette University School of Medicine.

1. Diphtheria Mortality in Large Cities of the United States in 1936, J. A. M. A. **108**: 2200 (June 26) 1937.

2. Jordan, E. O.: Some Unresolved Problems in Epidemiology, Proc. Inst. Med. Chicago **9**: 185 (Dec.) 1932.

3. Dudley, S. F.; May, P. M., and O'Flynn, J. A.: Active Immunization Against Diphtheria, M. Research Council, Special Report Series No. 195, 1934.

4. Schwartz, A. B., and Janney, F. R.: The Comparative Value of Toxoid and Other Agents in the Immunization of the Preschool Child Against Diphtheria, Am. J. Dis. Child. **39**: 504 (March) 1930.

5. Fraser, D. T., and Halpern, K. C.: The Antitoxic Response to Diphtheria Antigen in Children, J. Immunology **33**: 323 (Oct.) 1937.

6. Park, W. H.: Duration of Immunity Against Diphtheria Achieved by Various Methods, J. A. M. A. **109**: 1681 (Nov. 20) 1937.

sized. By means of the Schick test, varying degrees of effectiveness have been recorded for different materials; but, once a negative Schick test has been obtained, the immunity has been generally assumed to be permanent.

Whatever materials or method of immunization is followed, the immunity of the school child to diphtheria should be insured by either a routine Schick testing on all children entering school or by the administration of a routine dose of 1 cc. of toxoid at the time of entering school, as suggested by Fraser and Brandon.[7]

In order to maintain the low incidence of diphtheria in the United States, one of these two measures should be made a routine part of our preventive medicine program.

Clinical Notes, Suggestions and New Instruments

RHEUMATIC FEVER FOLLOWED BY MITRAL HEART DISEASE IN EACH OF IDENTICAL TWINS

J. E. MORGAN, M.D., AND S. J. WEBSTER, M.D., CLEVELAND

For many years the occurrence of simultaneous pathologic processes in homologous twins has aroused the curiosity of medical men. Recently it has been realized what interesting side lights such cases throw on both the etiology of disease and on genetics. Reports of such cases have been numerous in the literature. Many pairs of homologous twins have been born with identical developmental defects.[1] Others have almost simultaneously had various neoplastic diseases in middle or late life. Still others have had certain metabolic diseases, such as diabetes, within a few months of each other.[2] Other twins have had identical psychic disturbances varying from actual psychoses to similar alcoholic propensities.

It has been our privilege to observe mitral heart disease, following rheumatic fever, in each of identical twin girls. Since the case brings out some interesting points and since a survey of recent literature showed no similar case, we felt that it should be reported.

REPORT OF CASE

Annie F., a Slavish-American girl, aged 23, first consulted us Feb. 27, 1937. Her story was briefly as follows:

Six weeks before, her twin sister had died of "heart trouble." Ever since the death of her sister, the patient had feared that her heart also was affected. She had noticed precordial oppression, palpitation, and shortness of breath on slight exertion. These, she stated, were exactly the same symptoms which her sister had first noticed. The patient felt that her symptoms were probably due to an overwrought imagination, but she had decided to consult a doctor to still her fears. Feeling that she was highly distraught and that her symptoms were probably functional, we proceeded to examine her. She was rather slight and undernourished, evidently not in robust health. Surprisingly, examination of her heart, both by physical means and by the fluoroscope, did show typical signs of a far advanced rheumatic heart disease with well developed mitral stenosis.

Further delving into her history then brought out the following facts:

The twin girls, Annie and Mary F., were born Jan. 28, 1914. They were full term, healthy babies, and each is reported as weighing 7 pounds (3,175 Gm.). It was the mother's second pregnancy. Her first child died at 3 years of age of pneumonia. She had six subsequent pregnancies. All these children are alive and healthy. There were no other multiple pregnancies and, moreover, none were known on either side of the family.

The twins, as babies, were quite healthy and developed normally. The mother said that they were "always like as one"; that they were the same height and weight; that they talked alike and apparently even thought alike, as their reactions to a given situation were very similar. She stated that she could tell the girls apart from a front view but not from the back.

As is not surprising, the contagious diseases of childhood, measles, whooping cough and chickenpox, occurred simultaneously or nearly so.

At 15 years of age, Mary first acquired a cold and then multiarticular rheumatism, which began in her feet and ankles and migrated to her hands, wrists, elbows, shoulders and knees. The joints were swollen, red and acutely painful. She had a high fever and was quite ill. The attending physician made a diagnosis of rheumatic fever and told the mother at that time that the child's heart was affected.

Two weeks after the onset of Mary's illness, Annie developed the same train of symptoms. Her disease began in the same manner, starting in the feet and spreading to the other joints. The course was milder and she was not as ill as her sister at any time. The two girls remained in bed at home and recovered at the same time, getting up in about six weeks. The attending physician did not state whether or not Annie showed cardiac involvement. None of the other children were affected.

After recovering from this acute attack, both girls seemed well. They were active and were able to assist with the work of the home without discomfort. They never took part in gymnasium work at school because of the advice of their doctor.

About three years after the acute attack, Mary began to have marked shortness of breath on exertion. The attending doctor told the parents that she had rheumatic heart disease and advised rest and medication. The disease became progressively more and more severe and she died Jan. 13, 1937, of congestive heart failure.

In summary, two sisters, evidently identical twins, had rheumatic fever within two weeks of each other at 15 years of age. At 18 Mary began to show symptoms of congestive heart failure due to rheumatic heart disease. She died at 23, eight years after the primary attack of rheumatism. Now, just after the death of her sister, Annie shows signs of well developed mitral stenosis and is apparently on the verge of decompensation.

Dr. J. F. Machwart, who attended these girls during their early illness, has assured us that their first attack was typical rheumatic fever and that Mary had typical mitral stenosis before her death.

COMMENT

In such a case as the one presented, it is interesting to speculate why acute rheumatic fever should appear simultaneously in homologous twins and follow such a similar course in its progress to far advanced mitral heart disease. Identical twins probably develop from the two halves of a single fertilized ovum. They therefore should contain, as nearly as the vicissitudes of mitosis permit, exactly similar amounts of chromosome material. Therefore their hereditary potentialities of development, both anatomic and psychic, should be identical. The occurrence of similar developmental defects in each of homologous twins certainly suggests that the anlage of the malformation was present in the genes of the original fertilized ovum. Similar simultaneous and symmetrical development of neoplasms in homologous twins speaks for a definitely hereditary origin in the sense that the tumor must have had an original representation in the genes of the germ cell. Similarly, because of their occurrence in identical twins, it has been argued that the potentiality for developing certain metabolic diseases is a definite hereditary character and can be transmitted in a true mendelian ratio. None of these explanations, of course, fit our case. Rheumatic fever, while still not of proved etiology, is probably an infectious disease. It does not, however, have a high degree of infectiousness. It is definitely unusual for two children in the same family to be stricken with the disease at the same time, and that its course should be so similar certainly seems to suggest that there is a hereditary constitutional susceptibility which determines when

7. Fraser, D. T., and Brandon, K. F.: Duration of Schick Immunity, Canad. Pub. Health J. **27**: 597 (Dec.) 1936.

1. McFarland, Joseph, and Meade, T. S.: The Genetic Origin of Tumors Supported by Their Simultaneous and Symmetrical Occurrence in Homologous Twins, Am. J. M. Sc. **184**: 66 (July) 1932.

2. White, Priscilla; Joslin, E. P., and Pincus, Gregory: The Inheritance of Diabetes, J. A. M. A. **103**: 105 (July 14) 1934.

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even the infectious diseases shall be developed and guides their course along a predetermined path. This would be in agreement with Draper,[3] who defines constitution as "that aggregate of hereditarial characters, influenced more or less by environment, which determines the individual's reaction, successful or unsuccessful, to the stress of environment."

Although it is not apropos to the case being reported, we have recently made another interesting observation. In his excellent review of the diseases occurring in twins, McFarland [1] feels that the following generalization is justified: "Heterologous twins never suffer from identical malformations. Nor does one of homologous twins ever suffer from malformation not shared by its fellow." About six months ago we delivered a pair of heterologous twins, male and female, both of whom had bilateral clubbed feet. The clubbing of the two pairs of feet was identical in type, but the feet of the girl were less severely deformed and yielded to treatment more readily than those of the boy. It is difficult to explain such a case. It is hard to see how position in utero could account for similar and symmetrical clubbing of the two pairs of feet. Heterologous twins should have nothing more in common, from the strict point of view of heredity, than any other brother or sister from the same parents. Therefore if the malformations are on a strictly hereditary basis, they must have been an extremely rare coincidence. Other cases of similar malformations occurring in heterologous twins should be watched for, as they might throw light on this intriguing subject.

No attempt has been made to cover the theories of twinning or the laws of heredity covering this subject. For these, as well as for a complete bibliography, reference may be made to the large reviews of the subject.

CONCLUSIONS

A case of acute rheumatic fever developing to mitral heart disease in each of homologous twins would seem to present supportive evidence of a hereditary constitutional susceptibility to certain of the infectious diseases.

A case of similar malformation occurring in each of heterologous twins was observed.

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3. Draper, George: Human Constitution, Philadelphia, W. B. Saunders Company, 1924.

From the Department of Medicine, Columbia University College of Physicians and Surgeons, and the Presbyterian Hospital.

1. Christian, H. A.: New England J. Med. **214**: 418 (Feb. 27) 1936; Fulton, M. N., ibid. **214**: 1092 (May 28) 1936. Parkinson, John, and Thomson, W. A. R.: Lancet **1**: 16 (Jan. 4) 1936. Thomson, W. A. R.: Quart. J. Med. **6**: 321 (July) 1937.

PROLONGED USE OF "MERCURIN" SUPPOSITORIES IN THE TREATMENT OF CHRONIC EDEMA

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The use of rectal suppositories for the administration of mercurial diuretics has been recognized as a simple and effective method of treating chronic edema of nonrenal origin.[1] There has been some doubt as to the advisability of this type of treatment, because of the possibility of severe local irritation.

Without giving details, Christian states that "this treatment may be kept up for months with no bad effects." Fulton noted no unfavorable reaction after the administration of fifteen "Mercurin" suppositories to a single patient.

Two cases are reported here. In each one "Mercurin" suppositories [2] were used for more than a year with good diuretic effect and no evidence of rectal irritation.

REPORT OF CASES

CASE 1.—A. L., an Italian-born white housewife, aged 35 on admission, had pleurisy and ascites when she was 11 years old, followed by dyspnea on exertion and chronic but variable swelling of the legs and abdomen. When admitted to the Presbyterian Hospital in 1932, physical examination showed a heart of normal size with normal heart sounds, a right-sided hydrothorax, an enlarged liver and spleen, ascites, and edema of the legs up to the thighs.

Laboratory examinations gave the following results: Hemoglobin was 62 per cent (Sahli); red blood corpuscles numbered 3,940,000 per cubic millimeter. The white blood cell count was normal. The urine was normal. The Wassermann reaction of the blood was negative. Serum protein was 4 per cent. The pleural fluid was a pale straw color; specific gravity was 1.010; cells were 210 per cubic millimeter, lymphocytes 96 per cent; a guinea pig injected with the fluid showed no tuberculosis at autopsy. The T waves in an electrocardiogram under low voltage were isoelectric in all leads.

The diagnosis was probable constrictive pericarditis (Pick's syndrome).

There was no progression of the symptoms until 1935, when weakness, dyspnea and swelling of the abdomen and legs became more pronounced. Study at that time showed hemoglobin 60 per cent, red blood corpuscles 5,600,000 per cubic millimeter, serum protein 5.2 per cent, serum albumin 3.2 per cent, serum globulin 2 per cent and venous pressure 150 mm. of water (direct method).

Following transfusion and large doses of iron the anemia disappeared and she felt much improved, though enlargement of the liver and dependent edema persisted. The possibility of pericardial surgery was discussed, but the patient declined to have such an operation.

In July 1936, because of some increase in ascites and dependent edema, she started treatment with mercurial diuretics, administered intravenously or by rectal suppository. In the subsequent seventeen months she had sixteen injections of "Mercupurine" [3] intravenously and fifty-five "Mercurin" suppositories.

She has been ambulatory on limited activity throughout this time. There has been symptomatic improvement, lasting several days, after each use of the mercurial diuretics. She has had no symptoms of rectal irritation, but she does have mild abdominal cramps after each dose of mercury, whether given intravenously or by rectum.

CASE 2.—R. C., a native-born Negress, aged 42 on admission, had acute rheumatic fever for two months at 24 years of age and was told that her heart was damaged. In spite of an active and strenuous life and four pregnancies, she had no cardiac symptoms. In October 1933, at the age of 39, she had a supravaginal hysterectomy because of pain and excessive bleeding from uterine fibromyomas. The heart was described as normal and the postoperative recovery was uneventful.

Two months after this operation she began to have precordial pain, dyspnea on exertion and swelling of the abdomen and legs. She was admitted to the Presbyterian Hospital in June 1935 because of steady progression of these symptoms. Physical examination revealed an enlarged heart, with a systolic murmur and a transitory pericardial friction rub at the apex, passive congestion of the lungs, small right-sided hydrothorax, liver enlarged to 4 cm. below the costal margin, moderate ascites and pitting edema of the legs and over the sacrum.

Laboratory examinations gave the following results: Hemoglobin was 80 per cent (Sahli); red blood corpuscles numbered 3,950,000, the white blood cell count was normal and the urine was normal. Serum protein was 5.5 per cent and serum nonprotein nitrogen 24 mg. per hundred cubic centimeters. The Wassermann reaction of the blood was negative. A teleoroentgenogram of the heart revealed the total diameter to be 17 cm.; the internal diameter of the chest was 26 cm. In an electrocardiogram under low voltage, the T waves were inverted in all leads. The venous pressure was 240 mm. of water.

The diagnosis was active rheumatic myocarditis, possible constrictive pericarditis or disorder of the tricuspid valve.

The patient refused to consider a pericardial operation and she was not urged to do so because the large size of the heart revealed by x-ray examination seemed to make the diagnosis of constrictive pericarditis doubtful. Because of persistent ascites an abdominal paracentesis was done in December 1935 with the withdrawal of 6,000 cc. of clear fluid, which coagulated quickly. A guinea pig injected with this fluid showed no tuberculosis at autopsy.

Dyspnea, edema of the legs and ascites continued to be present in variable degree even though the patient's activity was greatly limited. In October 1936, because of increasing symptoms, the

2. The "Mercurin" suppositories used were provided by Campbell Products, Inc., of New York.

3. Now called "Mercurin with Theophyllin."

administration of mercurial diuretics was begun. In the next thirteen months she received eighteen injections of "Mercupurine" intravenously and thirty-five "Mercurin" suppositories. At no time did she have any symptoms of rectal irritation.

Her course was satisfactory until September 1937, when she discontinued her medication temporarily and had a great increase in the severity of her symptoms. Results obtained from further medication were not good, and she died in November.

Permission for postmortem examination was limited to the heart. The pericardial sac was large, but its surface was smooth and there were no adhesions to the wall of the chest or the pleura. The parietal pericardium was very thick, varying from 3 to 8 mm. in cross section, and was of a leathery consistency. The pericardial cavity was partially obliterated but contained more than 80 cc. of serosanguineous fluid. The heart itself was not enlarged. The mitral valve leaflets were thickened, but there was no stenosis of the valve. Microscopic examination revealed no evidence of active myocarditis or endocarditis, and the thick pericardium showed no evidence of any recent inflammatory process.

SUMMARY

Prolonged administration of mercurial diuretics by rectal suppository ("Mercurin") was given to two patients with no rectal disorder. Fifty-five were given to one patient and thirty-five to the other, without symptoms of rectal irritation.

622 West 168th Street.

THROMBO-ANGIITIS OBLITERANS IN SISTERS

NATHAN D. WILENSKY, M.D., AND WILLIAM S. COLLENS, M.D.
BROOKLYN

The rarity of thrombo-angiitis obliterans in women is revealed by the fact that a total of twenty-two case reports have appeared in the literature. We have recently had a very unusual experience in observing this disease in two sisters. To our knowledge this is the first observation of its kind. We are thus prompted to present the clinical histories.

REPORT OF CASES

CASE 1.—P. L., a Polish Jewess, aged 34, who came under observation on Sept. 4, 1937, had noticed five years before that walking produced an aching pain and cramps in her feet and legs. Her claudication became progressively worse, so that at the time of examination she was unable to walk more than one-half block. The pain was relieved only after a few minutes of rest. She also complained of cold feet and noticed their pale appearance. She had formerly been employed as an artificial flower worker but was compelled to give up her occupation because she experienced severe pain in the muscles of her left hand and arm during work. For the last six months she had had two painful ulcers, the size of a quarter (24 mm.), on the lower third of her right leg, and they had failed to heal in spite of a wide variety of therapeutic attempts. Former treatments consisted of intravenous injection of typhoid vaccine three times a week for four weeks, eight intravenous injections of hypertonic saline solution, suction and pressure treatments, diathermy and local application of ointments.

The patient had smoked three cigarets a day up to four years ago, when she was told to stop smoking because of her circulatory disturbance. She had not been observing any dietary restrictions, and rye bread was part of her regular intake.

Physical examination revealed that she was well nourished and well developed. The blood pressure was 120 systolic and 90 diastolic. She weighed 135 pounds (61 Kg.) and was 62 inches (157 cm.) tall.

Examination of her extremities showed a slight pallor of both feet in the recumbent position. They became cadaverous on elevation, and in the dependent position a marked cyanotic rubor developed. Both feet and legs were cold to the touch. The venous filling time was sixty seconds for both legs. Palpable pulsations were absent from both dorsalis pedis, posterior tibial and popliteal arteries. The left radial and ulnar vessels were not palpable. The left hand was cold to the touch. The vessels of the right hand were palpable and the extremity was warm. The oscillometric readings are shown in table 1.

Cordlike veins were felt in both legs. The Wassermann reaction of the blood was negative. The blood count was normal and urinalysis gave entirely negative results. The blood sugar content was 94 mg. per hundred cubic centimeters. X-ray examination of both legs and the left arm showed no signs of calcification. Examination of the eyegrounds gave negative results.

TABLE 1.—*First Oscillometric Readings in Case 1*

	Lower Extremities			Upper Extremities	
	Right	Left		Right	Left
Midthigh	½	0	Below elbow	3	½
Below knee	0	0	Above elbow	4	¼
At ankle	0	0			
Dorsalis pedis	0	0			

TABLE 2.—*Oscillometric Readings in Case 1 After Six Weeks*

	Right	Left
Midthigh	½	Trace
Below knee	½	Trace
At ankle	0	0
Dorsalis pedis	0	0

We have had an opportunity to observe two attacks of migrating phlebitis in the patient's left leg since she came under our care.

She was put to bed under a cradle baker with the heat maintained at 95 F. and was given intermittent venous occlusion at 30 mm. of pressure, starting with one minute on and two minutes off, continuously. She was also given twenty minutes of short wave treatment three times a week. Azochloramid ointment was applied locally to the ulcers, and the pain was relieved in three days. After one week of treatment the intermittent venous occlusion was reduced to eight hours a day. There was marked improvement in her walking ability, as indicated by the claudication time test. Although she could formerly walk only one-half block, she was now able to walk two and one-half blocks before experiencing a cramp. On October 18 the ulcers had completely closed over. Dr. Charles Goodman performed intradermal tests for rickettsia and found them positive with various dilutions. At the present time her feet are warm and sweaty. She has no pains when at rest. Her venous filling time is thirty seconds in her right foot and thirty-five seconds in her left foot. The cadaverous color has disappeared. Her oscillometric readings taken six weeks after the institution of treatment are shown in table 2.

CASE 2.—Mrs. S. M., aged 40, a sister of Mrs. P. L., has had intermittent claudication for the past fourteen years. It was originally present in the muscles of the right foot and has recently progressed to the muscles of the calf. For the past four years she has had numbness and coldness in the toes of the left foot. At present she has pain when at rest and burning pain and a sensation of pins and needles in all of her toes. Unlike her sister, she has no history of migrating phlebitis.

She had typhus fever as a child. She has never smoked, she uses rye bread in her diet and she does not consume any alcoholic drinks. She is married and has two normal sons.

TABLE 3.—*Oscillometric Readings in Case 2*

	Lower Extremities	
	Right	Left
Midthigh	3½	3
Below knee	3	2
At ankle	½	½
Dorsalis pedis	¼	0

From the Peripheral Vascular Clinic of the Israel-Zion Hospital.

Physical examination revealed that she was well nourished and well developed. The blood pressure was 130 systolic and 90 diastolic. She weighed 126 pounds (57 Kg.), and she was 60 inches (152 cm.) tall. Her heart was normal. Examination of the eyegrounds did not show any vascular changes. Examination of the urine gave entirely negative results.

All of her toes had a cadaverous appearance. The arterial pulsation of the dorsalis pedis was felt in the right foot and was absent in the left foot. When she elevated her legs the plantar surfaces became blanched, the left more than the right, and she complained of an aching cramp in the toes of her left foot. The venous filling time was fifteen seconds in the right and twenty-five seconds in the left foot. X-ray examination failed to disclose any evidence of calcification of the arteries of the legs and the feet. However, a phlebolith was seen in one of the veins of the calf. The intradermal test for rickettsia was markedly positive with all dilutions. Oscillometric readings for both legs are shown in table 3.

These signs clearly indicated evidence of arterial impairment of thrombo-angiitis obliterans.

COMMENT

It would appear that these two cases present sufficient clinical evidence and all the criteria necessary to establish the diagnosis of thrombo-angiitis obliterans. There was a history of progressive intermittent claudication, coldness and paresthesias of the feet and toes, impairment in circulation as indicated by reduced oscillometric readings, absence of palpable pulsations, prolongation of the venous filling time, confirmatory plethysmographic studies and failure of ulcers to heal. The pathognomonic sign of migrating phlebitis was present in one case. The absence of calcification, the normal blood pressure, the negative serologic tests and the absence of any evidence of diabetes tend to rule out other possible causes of the occlusive arterial disease.

Smoking apparently had little to do with the onset or progress of the disease in either of these cases. One patient had smoked only moderately up to the time of onset of her symptoms, and the disease progressed in spite of cessation of this habit. The sister had never smoked at all.

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HAND INJURIES DUE TO INJECTION OF OIL AT HIGH PRESSURES

DONALD E. DIAL, M.D., CLEVELAND

Rees [1] has called attention to the absence of reports of injuries resulting from the injection into the tissues of oil under high pressure, such as may occur in working with Diesel engines. In these engines the fuel is forced through fine jets at pressures as high as 6,000 pounds per square inch in order to produce finely divided particles for rapid combustion. At such pressures the fine spray may penetrate the skin and cause injury to the subcutaneous tissues. In the case reported by Rees the accident resulted, in twenty-four hours, in intense pain and marked swelling of the affected finger and the hand. Gangrene of the finger followed and amputation through the metacarpal bone became necessary. The cases to be reported here were similar in several respects; namely, the severe pain, the gangrene and the sterile necrosis involving the skin and especially the subcutaneous tissues.

REPORT OF CASES

CASE 1.[2]—An engineer brought the tip of his index finger in contact with a fine jet of oil coming from a Diesel engine injector under high pressure. The finger immediately ballooned out like a sausage, and the patient milked oil out of the little puncture in the end of his finger. He was seen immediately after the accident, but nothing showed objectively except moderate swelling of the finger and a punctate wound at the tip of the distal phalanx. That night more swelling developed, with intense pain in the finger. Still later the swelling increased, with a somewhat livid discoloration of the whole finger. The patient was hospitalized and deep linear incisions were made on both lateral aspects of the phalanges.

The end result was that the entire distal phalanx became necrotic and was amputated; also the flexor profundus tendon sloughed. A peculiar condition developed in that for weeks after the amputation small pieces of wax kept being extruded from the stump.

The patient has a moderately useful finger but some circulatory impairment has persisted.

CASE 2.—An engineer, aged 44, while testing the fuel injectors of a Diesel engine, inadvertently put his hand in front of the injector and the spray struck the volar surface of the left index finger. When he was seen less than an hour later there was very little swelling and the color of the finger was not abnormal. There were three minute puncture wounds on the volar surface of the distal phalanx but no bleeding. There was moderate pain. The distal end of the finger was blocked with procaine hydrochloride and two parallel longitudinal incisions were made over the volar surface, a sterile dressing was applied and the patient was allowed to go home. Seven hours later the pain was so severe that one-fourth grain (0.015 Gm.) of morphine was given, with partial relief. Twenty-four hours after the injury the pain had diminished but was still severe. The color of the finger was satisfactory. There was very little drainage. A hot magnesium sulfate soak was given and the patient was instructed to repeat this treatment at four hour intervals at home. Forty-eight hours after the injury there was a bluish discoloration of the pulp of the finger and of the subungual tissue. There was less pain than before. Sensation to pinprick on the volar surface was diminished. The picture was that of incipient gangrene. Oscillometric readings showed a definite decrease in the ulnar and radial pulses as compared with those of the uninjured hand. The patient was therefore hospitalized at once and positive-negative pressure treatments (passive vascular exercise) were given for three hours twice a day. The finger became more comfortable with this treatment and the temperature, which was never more than 38 C. (100.4 F.), became normal in two days. The color of the finger also improved, but only temporarily. On the eleventh day after the injury the finger tip was again discolored and, although there was no pain or elevation of temperature, there was definite fluctuation. A fish-mouth incision was made, therefore, liberating a small amount of purulent material which showed no growth on culture. The subcutaneous tissue was gray and necrotic. Bare bone was not exposed. Hot moist dressings were applied for several days and after two days, when a negative culture was reported, the passive vascular exercise treatments were resumed. After the incision and drainage the general color of the finger improved, but the small area of skin between this incision and the one made on the day of the injury became gangrenous and was removed. The wound slowly filled in and was healed in two months from the onset. The passive vascular exercise treatments were continued until discharge from the hospital a month after admission.

Examinations of the blood and urine showed nothing unusual. A roentgenogram of the finger on the fifth day of the disease showed no evidence of pathologic changes of the bone.

This patient also has a useful finger, although there is almost no motion in the distal interphalangeal joint.

An attempt was made to determine the nature of this type of injury by injecting small amounts of the fuel oil beneath the skin of a rabbit's ear. Injections of oil varying in amount from 1 minim (0.06 cc.) to 1 cc. were made. In each case a sterile abscess formed without the local heat and redness usually associated with infections. It is assumed that the oil is in itself toxic, producing a reaction similar to that caused by turpentine.

The logical treatment, as suggested by Rees, would seem to be early and liberal incision. In case 1 the incision was probably delayed too long. In case 2 incision was done early but was perhaps not adequate in extent. The value of passive vascular exercise is hard to determine, though it seemed to be of some value in this instance. It deserves trial on the basis of the associated arteritis or arterial spasm which was shown to be present in one case.

The Lorain Avenue Clinic.

1. Rees, C. E.: Penetration of Tissue by Fuel Oil Under High Pressure from Diesel Engine, J. A. M. A. **109**: 866 (Sept. 11) 1937.
2. Dr. George Gilpin permitted me to report his case (case 1) with mine.

DERMATITIS FROM THE USE OF DRY SHAVERS

HAROLD SHELLOW, M.D., CHICAGO

In recent years dry shaving methods have been widely popularized and in many instances they have been adopted to minimize the amount of irritation of the skin. It is my purpose to report three cases of dermatitis resulting from the use of dry shavers. Since this paper was written, four additional cases have come to my attention.

REPORT OF CASES

CASE 1.—A young man who had been using a round-head type of dry shaver for a month noticed an eruption on his face. This started with a burning and redness of the skin, which came on several days after he had used the new method of shaving. At first the reaction lasted for a few hours but, with continued use of the implement, the rather transient inflammation gave way to a permanent redness and scaling around the hairs. He stated that he had used the shaver over and over again in order to obtain a shave as close as he had accomplished with the ordinary variety of razor.

He had a pinhead to small pea sized erythematopapular eruption, in the main about the hair follicles but also present interfollicularly. Fine scaling accompanied the eruption and a few scattered pustules were seen. The lesions were distributed over the bearded areas of the cheeks and the sides of the chin and in small patches on the upper front part of the neck.

In four days after an ordinary razor was substituted and a bland lotion prescribed, the eruption began to fade; no pustules were seen and six days later, except for a faint reddish tinge, the skin was normal. Two weeks after the dermatitis disappeared, on resumption of shaving with the electric razor, burning, tingling and redness came on, followed in two days by duplication of the former condition. No after-shaving lotion had been used. Patch tests with the razor head and soap were negative.

CASE 2.—A man, aged 22, who had had a clear skin until about a week after he started using a dry shaver (flat-head type), complained of a transient burning and redness of the face which was followed by an eruption. An ordinary face soap had been used and, except for talcum powder, no after-shaving preparation had been applied. The eruption involved the bearded areas of the face and consisted of erythematous papules ranging from the size of a pinhead to slightly larger. These coalesced to produce irregular patches with small islands of normal skin intervening. In the follicular areas the papules were of a deeper reddish hue and occasional pustules and crusts were seen.

With discontinuance of the dry shaver, the substitution of an ordinary razor and the use of bland medication, all subjective symptoms vanished in three days, and in two weeks the skin was back to normal. Seen again a month later, the patient stated that he had tried the electric razor for a few days in succession but had experienced burning and redness of the skin and had been compelled to stop using the shaver.

CASE 3.—A young woman complained of a rash on her legs which was accompanied by burning and itching. The day before the eruption appeared she had used a dry shaver to remove the hair on her legs. She readily admitted that she went over the skin time and again in order to remove the short stubbles of hair. The eruption consisted of pinpoint to pinhead sized maculopapules of bright red hue, hemorrhagic in nature. It involved the anterior, medial and lateral aspects of the lower extremities from below the knees to about the lowest one third of the legs.

Three days after the first appearance of the eruption the follicular lesions became darkly crusted, and a week later only residual redness remained. Six weeks later she again used a dry shaver, this time a different variety, but the following day the skin broke out as it had before. Patch tests with the shaving heads were negative.

COMMENT

In the presence of an eruption, the dry shaving method has often been usefully employed to reduce the amount of irritation of the skin. Under normal conditions two factors are offered as an explanation of the dermatitis: First, the lack of preparation that accompanies the use of the dry shaver may lead to neglect of washing the skin, thereby increasing the likelihood of infection. Second, and conceivably the essential one, there is traumatization, which results from the desire to obtain as close a shave with the dry shaver as with the ordinary razor. Observations have shown that this is almost impossible to achieve but, in an attempt to do so there is a tendency to cause constant manipulation or overuse of the device, as illustrated by the cases here reported. The vigorous application leads to trauma by virtue of the fact that the head of the shaver is "massaged" on the skin, thereby producing irritation, which leads to the dermatitis.

These cases are few in number, but with the multitude of users it must follow that many cases similar to these have and will occur, and this may serve as a means of calling attention to the possible source of cutaneous manifestations that the dry shaving method may produce.

185 North Wabash Avenue.

Special Article

THE CHEMISTRY OF VITAMIN A AND SUBSTANCES HAVING A VITAMIN A EFFECT

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Department of Agriculture
ST. PAUL

This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—ED.

Shortly before the late Dr. Lafayette B. Mendel wrote an article on vitamin A for the previous vitamin symposium in THE JOURNAL, the perplexing question as to why the yellow-red plant pigment carotene exhibits vitamin A activity although the familiar vitamin A of liver oils is essentially a colorless substance had been answered by the discovery [1] that carotene is convertible in the body to vitamin A. In fact the chemical basis for such a relationship had just been established by the brilliant researches of Karrer and his associates, who had determined the chemical constitution both of plant carotene [2] and also of vitamin A [3] from fish liver oil.

The first complete structural formula for carotene (fig. 1) has since turned out to be that of β-carotene, which is by far the most important and widely distributed of the known coloring matters which have vitamin A activity.

β-carotene is a nitrogen-free, aliphatic, methylated polyene having two identical, unsaturated, methylated terminal rings. (The term polyene is given to compounds having a series of conjugated double bonds.)

1. Moore, Thomas: Vitamin A and Carotene: V. The Absence of the Liver Oil Vitamin A from Carotene; VI. The Conversion of Carotene to Vitamin A in Vivo, Biochem. J. **24**: 696 (No. 3) 1930; The Distribution of Vitamin A and Carotene in the Body of the Rat, ibid. **25**: 275 (No. 1) 1931.

2. Karrer, P.; Helfenstein, A.; Wehrli, H., and Wettstein, A.: Pflanzenfarbstoffe: XXV. Ueber die Konstitution des Lycopens und Carotins, Helv. chim. Acta **13**: 1084, 1930.

3. Karrer, P.; Morf, R., and Schöpp, K.: Zur Kenntnis des Vitamins A aus Fischtranen II. Helv. chim. Acta **14**: 1431, 1931.

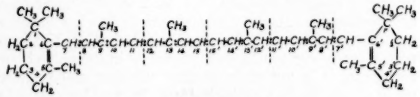
When the aliphatic central chain is examined more closely it may be considered as a condensed chain of four dehydrated isoprene (β-methylbutadiene) residues, shown in the diagram between the broken vertical lines. It will also be noted that these isoprene residues are arranged in pairs, which are united in reverse order at the carbons 15, 15'.

The discovery of this fact by Karrer and his associates is important to an understanding of the relation of carotene to vitamin A because the double bond uniting the two pairs of reversed isoprene residues is evidently capable of hydrolysis giving rise to an alcoholic group in each of the split products. This is the only known basis for the formation of vitamin A from those carotenoids which, in addition to the same polyene chain, also possess, at one or both ends of the structure, the same rings possessed by β-carotene.

In keeping with these facts, Karrer and his associates proposed the structure for vitamin A shown in figure 2, which is now generally accepted.

The ring structure in both β-carotene and vitamin A proved to be of great importance for establishing the structural and the chemical relationships of these substances. The ingenious researches of Karrer were the first to prove that β-carotene contains two β-ionone rings, β-ionone having the structure shown in figure 3.

When this structure was demonstrated in carotene it was relatively easy to demonstrate its occurrence in a highly purified vitamin A preparation from fish liver



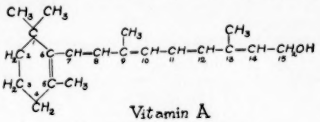
β-carotene

Fig. 1.—Structure of β-carotene.

oil. Soon Heilbron, Morton and Webster [4] were able to substantiate Karrer's formula by forming a naphthalene compound from vitamin A which one could account for only by assuming the correctness of Karrer's formula. Also, Karrer [5] himself completed the proof by an eight step synthesis of crystalline perhydrovitamin A (the completely hydrogenated derivative of the highly unsaturated compound), beginning with β-ionone and proving its complete chemical identity with the similarly crystalline hydrogenated natural vitamin from fish liver oil.

The final step in this chemical story is the synthesis of the pure vitamin in vitro. Recent reports [6] indicate that this has been accomplished. The isolation of the crystalline natural vitamin has also been reported.[7]

The ring structure in vitamin A is of great biochemical importance. Not only does it play an as yet undetermined role in the biologic activity of the vitamin but it has also been demonstrated that of the thirty or more carotenoids whose chemical structure now seems well established only four may be converted in vivo to vitamin A; likewise, only these possess the optically inactive β-ionone ring. Of these four vitamin A precursors only β-carotene has two such rings; α-carotene has one β-ring and one optically active α-ring; γ-carotene has only one ring, a β-ring, the other potential ring being open, and cryptoxanthin has one β-ring and one β-oxidized ring. γ-carotene, being a monocyclic compound, is related both to carotene and to lycopene, the familiar red tomato pigment, which is a noncyclic hydrocarbon having both potential β-ionone

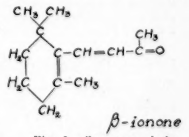


Vitamin A

Fig. 2.—Structure of vitamin A.

rings open. As previously stated, β-carotene is much the most important of the four known vitamin A precursors, α-carotene and, especially, γ-carotene and cryptoxanthin having a limited distribution in the natural foodstuffs of man and animals.

In several of the best known and most widely distributed carotenoids, one or both of the terminal rings have one or more alcohol (=CHOH) groups, as already mentioned for cryptoxanthin, or they may have one or more ketone (=CO) groups. Astacin (astacene), the familiar red pigment of lobster and salmon, is a tetraketo-β-carotene. It is a curious fact, however, that the part of a carotenoid molecule possessing the α-ionone ring or its alcohol or ketone derivatives or containing the alcohol or ketone derivatives of the β-ionone ring is not convertible in vivo to vitamin A. As carotenoids which have no ring structure, such as lycopene, capsorubin (capsorubene), bixin (bixene) and crocetin (crocetene), have no vitamin A activity, as is the case for one-half the molecule of γ-carotene, previously referred to, it is concluded that the intact β-ionone ring is an essential component of the vitamin A molecular structure. It is further concluded that each molecule of β-carotene is capable of giving rise to two molecules of vitamin A, while α-carotene, γ-carotene and cryptoxanthin may give rise to only one vitamin A molecule. It is further concluded that no other carotenoid [8] whose structure has been determined is a potential vitamin A precursor.



β-ionone

Fig. 3.—Structure of the β-ionone ring.

The carotenoids possessing alcohol-containing or ketone-containing ionone rings are much more abundant in nature than are the carotenes. Several of these carotenoids were formerly classed together under the general term xanthophyll because of their characteristic yellow color. Of the many xanthophylls (?) now known, only one is still called xanthophyll, more specifically plant xanthophyll (sometimes called lutein); it is a dioxy-α, β-carotene. Earlier reports of vitamin A activity of crystalline plant xanthophyll were not confirmed and would not have been expected to be confirmed had the chemical relationships been established between the carotenes and vitamin A.

Most of the pigments formerly classed as xanthophylls now carry a specific name ending in -xanthin, such as zeaxanthin, the dominant pigment of yellow corn, also

4. Heilbron, I. M.; Morton, R. A., and Webster, E. T.: The Structure of Vitamin A, Biochem. J. **26:** 1194 (No. 4) 1932.
5. Karrer, P.; Morf, R., and Schöpp, K.: Synthese des Perhydrovitamins A, Helv. chim. Acta **16:** 557, 1933.
6. Fuson, R. C., and Christ, R. E.: The Condensation of β-Cyclocitral with Dimethylacrolein, Science **84:** 294 (Sept. 25) 1936. Kuhn, R., and Morris, C. J. O. R.: Ber. d. Deutsch. chem. Geselisch. **70B:** 853, 1937.
7. Holmes, H. N., and Corbet, Ruth E.: A Crystalline Vitamin A Concentrate, Science **85:** 103 (Jan. 22) 1937.
8. A possible exception is echinenone, a carotenoid from the sea urchin (Lederer, E., and Moore, T.: Echinenone as a Provitamin A, Nature **137:** 996 [June 13] 1936).

found in green leaves; capxanthin, the dominant pigment of the red peppers, paprika and pimento; fucoxanthin, the dominant pigment of the so-called brown algae; flavoxanthin, the buttercup pigment; violaxanthin, from the yellow pansy, and taraxanthin, from the dandelion.

Table 1 shows some of the more important carotenoids, their chief occurrence in nature and their relation to vitamin A.

The aliphatic primary alcohol structure of vitamin A is important also in connection with its biochemical properties. It allows for esterification and therefore for compounds of vitamin A with fat acids, proteins and bile acids, which would not be possible for any of the known carotenoid precursors of the vitamin except cryptoxanthin, which, as already stated, has an alcohol group on one of its ionone rings. The alcohol groups on the ionone rings are also capable of ester formation;

TABLE 1.—*A Partial List of Carotenoids, Their Important Sources and Their Relation to Vitamin A* *

Name	Sources	Molecules of Vitamin A Possible from One Molecule of Pigment
α-carotene	Red palm oil, chestnuts, carrot root, mountain ash berries	1
β-carotene	Green leaves, carrot root, red palm oil, butter	2
γ-carotene	Fruits of Gonocaryum pyriforme (a Dutch East Indies plant), leaves of lily-of-the-valley	1
Cryptoxanthin	Red calix and fruit of the Chinese lantern plant, yellow corn, egg yolk, green grass	1
Xanthophyll (lutein)	Green leaves and grass	0
Zeaxanthin	Yellow corn, green leaves, egg yolk	0
Rhodoxanthin	Seed coat of the yew	0
Astacin	Lobster, salmon, shrimp	0
Lycopene	Red tomato, watermelon	0
Capxanthin	Red peppers, paprika, pimiento	0
Fucoxanthin	Brown algae	..
Taraxanthin	Dandelion, sunflower, cockspur	0
Violaxanthin	Yellow pansy	0
Flavoxanthin	Buttercup	0

* The carotenoids mentioned are not necessarily the exclusive cause of the pigmentation of the products mentioned. In most cases they are not. Of the vitamin A active products, red palm oil and carrots contain chiefly β-carotene and α-carotene and butter chiefly β-carotene, and of the carotenoids in green leaves, β-carotene is found almost exclusively, although xanthophyll and zeaxanthin are the dominant carotenoids.

in fact, the carotenoids which possess such structures apparently exist in nature as esters rather than as free pigment. Various fat acid esters of vitamin A have been described, and there is evidence to indicate that the vitamin is absorbed as bile acid compound,[9] transported in the blood and lymph as fat-acid ester[10] and stored in the liver as a similar compound.[11] This suggests that the vitamin performs its biochemical function in chemical combination with other substances rather than as free substance. Support for this theory is found in the experiments of Wald,[12] which point to a close chemical relationship between the visual purple (rhodopsin) of the retina and a protein-vitamin A compound, which offers a chemical explanation for the well known importance of vitamin A in certain of the visual processes, including its role in the correction of idiopathic hemeralopia.

Vitamin A compounds are decomposed, with the liberation of the vitamin, by such hydrolytic processes as occur in saponification, although the vitamin, being an alcohol, is not itself saponifiable. Most of the carotenoids, as their structure indicates, are also nonsaponifiable. Therefore the vitamin A precursors, together with any vitamin A, appear in the nonsaponifiable extracts of fats and oils that contain them. This is the basis of the manufacture of the so-called cod liver oil "concentrates." Because of its alcoholic nature, vitamin A may be separated from its carotenoid precursors by the "phase-separation" test, by which a petroleum ether (low boiling) solution of the mixed products is shaken with 80 to 90 per cent methyl alcohol. The alcohol will extract the vitamin A from the immiscible upper layer of petroleum ether, leaving behind all its carotenoid precursors.

Consideration must be given the possible importance of the unsaturated bonds in vitamin A. Four of these are present in the aliphatic side chain and one in the ionone ring. Perhydrovitamin A and perhydro-β-carotene, which are completely hydrogenated substances, have no biologic activity, but both α-dihydrocarotene and β-dihydrocarotene are active,[13] as is also di-iodocarotene. The double bonds eliminated when the last-named by-product is formed are solely in the side chain. However, it is not entirely clear whether the relation of unsaturation to physiologic activity resides solely in the β-ionone ring or whether some unsaturation in the side chain is also important. It is certain of course that the side chain unsaturation explains for the most part the probable function of vitamin A as oxidation reduction catalyst, also possessed by the carotenoids. The unsaturated bonds explain the action of both vitamin A and its precursors as hydrogen acceptors, and experimental evidence has shown that the substances readily absorb oxygen in solution and are markedly pro-oxygenic when undergoing oxidation. Highly oxidized carotenes and vitamin A have no biologic activity, a fact of great importance in the preservation of the vitamin A activity of foods and medicinal products. Hydroxyphenolic compounds, such as hydroquinone and vitamin E, exert some protective action against the oxidation of carotenes and vitamin A. Vitamin A and its precursors are stable to the usual cooking and heat-processing procedures provided they are protected against oxidation.

Vitamin A and its precursors exhibit characteristic differences in their affinity toward various adsorbents, such as calcium carbonate and alumina (aluminum oxide). When a petroleum ether solution of the mixture is filtered through a tightly packed column of finely powdered aluminum oxide, the order of decreasing adsorption affinity will be γ-carotene> cryptoxanthin> β-carotene> α-carotene> vitamin A. This property has been very useful in the isolation and study of the carotenoid precursors of vitamin A.

9. According to J. D. Greaves and C. L. A. Schmidt (Relation of Certain Bile Acids to Absorption of β-Carotene in the Rat, Proc. Soc. Exper. Biol. & Med. **36**: 434 [May] 1937), carotene cannot form compounds with bile acids, although the bile is essential for the absorption of the provitamin (The Utilization of Carotene by Jaundiced and Phosphorus Treated Vitamin A Deficient Rats, Am. J. Physiol. **111**: 502 [April] 1935). See also von Euler, Hans, and Klussmann, Ericka: Zur Biochemie der Carotinoide und des Vitamins C (Ascorbinsäure), Ztschr. f. physiol. Chem. **219**: 215 (Aug.) 1933.

10. Drummond, J. C.; Bell, Muriel E., and Palmer, Elizabeth T.: Observations on the Absorption of Carotene and Vitamin A, Brit. M. J. **1**: 1208 (June 15) 1935.

11. Reti, Ladislav: Contribuciones al estudio bioquimico de la vitamina A: I. Sobre el estado de combinacion de la vitamina A en las aceites de higado, Rev. Soc. argent. de biol. **11**: 283 (July) 1935; Sur l'état de combinaison de la vitamine A dans les huiles de foie, Compt. rend. Soc. de biol. **120**: 577 (No. 33) 1935.

12. Wald, George: Carotenoids and the Visual Cycle, J. Gen. Physiol. **19**: 351 (Nov. 20) 1935.

13. von Euler, H.; Karrer, P.; Hellström, H., and Rydbom, M.: Die Zuwachswirkung des isomeren Carotine und ihrer ersten Hydrierungsprodukte, Helv. chim. Acta **14**: 839, 1931.

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Each of the vitamin A active carotenoids shows characteristic absorption bands in the visible (blue and violet) region of the spectrum. The exact position of these bands depends on the index of refraction of the solvent employed, and their intensity depends on the molar concentration of carotenoid in the layer through which the light passes. Spectroscopic absorptions of much less intensity occur in the ultraviolet, which may be detected by photographic methods. The wavelengths of maximum absorption of the two most prominent visible bands of the vitamin A active carotenoids in carbon disulfide solution are shown in table 2.

Vitamin A differs from its precursors in showing no absorption bands in the visible region of the spectrum. Instead it shows a rather broad absorption region in the ultraviolet, with a definite maximum at 328 millimicrons in chloroform. These spectroscopic properties form the basis for the spectrophotometric methods for the quantitative estimation of vitamin A and its precursors.

All substances having the polyene structure give color reactions with numerous reagents, most of which are either strong acids or chlorides of polyvalent metals. The intense blue reaction with antimony trichloride given by the carotenes and the blue-violet color given with the same compound by vitamin A have been studied extensively. They serve to reveal the presence of vitamin A and its precursors in animal tissues and products and form the basis of carefully developed quantitative colorimetric methods, especially for preliminary assays of cod liver and other fish liver oils rich in vitamin A, and for exploratory research in the physiology of the vitamin.

The spectroscopic properties and color reactions mentioned will no doubt be discussed in greater detail in another paper in this series dealing with methods of assay.

Although the chemical and physiologic relations between vitamin A and its precursor carotenoids have been well established, the conversion of the latter to the former has not yet been accomplished by chemical procedures. All evidence points to the liver as the site of the formation of vitamin A in animals, presumably by means of an enzyme, which has been called carotenase. Earlier reports [14] of demonstration of this action in vitro have not been confirmed. It is clearly unnecessary for man or animals to make this conversion when vitamin A is provided per se in the diet. Indeed, question has been raised as to whether all species [15] are able to form vitamin A from carotene. Marked differences between species no doubt occur with respect to the efficiency of conversion of carotene to vitamin A. It is known that considerable of the ingested carotene occurs in the blood and is deposited in adipose tissue in man, the cow and the horse; in the cow, for which the problem has been studied, a relatively small proportion [16] of ingested carotene is absorbed and converted into vitamin A. Some breeds, such as the Guernsey, convert a smaller proportion of absorbed pigment than others, thus accounting for the larger proportion of carotene than of true vitamin A in their milk fat in contrast to Holstein milk fat, which is lower in carotene but richer in true vitamin A.

Although color is one of the outstanding properties of the vitamin A precursors, in contrast to the essentially colorless vitamin A, some common human foods of animal origin which are not vitamin A precursors are often highly pigmented with carotenoids. For example, the yolk of hen eggs is normally poor in carotene but rich in zeaxanthin and xanthophyll. Normally it contains also vitamin A itself, owing to its formation in the fowl from the vitamin A precursors absorbed from the ration, as well as to the practice of adding fish liver oil to the ration. The carotenoid precursors of the vitamin occurring in egg consist largely of cryptoxanthin,[17] especially when the hen is fed heavily on yellow corn or grass.

There is much more relation between color and potential vitamin A activity of the common vegetable foods consumed by man than between color and vitamin A activity of animal tissues or products of animal metabolism. Green and yellow (or orange) are the color indicators of potential vitamin A in plants, the former because carotenes always accompany the green chlorophylls. Natural yellow color may be a rough qualitative guide for selection of vitamin A active animal products, because it indicates the consumption of carotenoids and vitamin A precursors by animals even though the carotenoid which colors the product is not a vitamin A precursor. However, all fatty animal products are apt to contain some vitamin A itself if the animal is a transformer of carotene to vitamin A, regardless of the color of the product; some products may be exceptionally rich in true vitamin A and relatively poor in pigment. Certain of the fish liver oils have this characteristic, notably that of the halibut and the burbot.

TABLE 2.—*Wavelengths of Maximum Absorption of Carotenoids*

Carotenoid	Absorption, Mμ.	Maximum, Mμ.
γ-carotene	533.3	496.0
β-carotene	521.0	485.0
Cryptoxanthin	518.0	483.0
α-carotene	509.0	477.0

In connection with any consideration of the relation between color (carotenoid) and vitamin A activity it should be remembered that vitamin A is the only vitamin so far discovered which is a product solely of animal metabolism from precursors which are metabolic products only of plants. This should not be lost sight of in spite of the fact that pure β-carotene is the international vitamin A standard, 1 international unit being the growth-promoting activity in rats of 0.0006 mg. of the standard β-carotene.

For a much more extensive discussion of the chemistry of vitamin A and the substances having the effect of vitamin A than is possible in this article the reader is referred to the extensive paper by Karrer and Wehrli [18] and the monograph of Zechmeister.[19]

14. Olcott, H. S., and McCann, D. C.: Carotenase: The Transformation of Carotene to Vitamin A in Vitro, Science **74**: 414 (Oct. 23) 1931; The Transformation of Carotene to Vitamin A in Vitro, J. Biol. Chem. **94**: 185 (Nov.) 1931.

15. J. L. Rea and J. C. Drummond (Ueber die Bildung von Vitamin A aus Carotin im tierischen Organismus, Ztschr. f. Vitaminforsch. **1**: 177, 1932) obtained evidence that this is not possible in cats.

16. Bowmann, C. A.; Steenbock, Harry; Beeson, W. M., and Rupel, I. W.: Fat-Soluble Vitamins: XXXIX. The Influence of Breed and Diet of Cows on the Carotene and Vitamin A Content of Butter, J. Biol. Chem. **105**: 167 (April) 1934.

17. Gillam, A. E., and Heilbron, I. M.: Vitamin A-Active Substances in Egg-Yolk, Biochem. J. **29**: 1064 (No. 5) 1935.

18. Karrer, P., and Wehrli, H.: 25 Jahre Vitamin-A-Forschung Nova Acta Leopoldina, N. S. **1**: 175, 1933.

19. Zechmeister, L.: Carotinoide, Berlin, Julius Springer, 1934; Lipochrom und Vitamin A, in Schönfeld, H.: Chemie und Technologie der Fette und Fettprodukte, Vienna, Julius Springer, 1936, vol. 1, p. 147.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

PEERLESS ULTRA SHORT WAVE UNIT, MODEL UW2M, ACCEPTABLE

Manufacturer: Peerless Laboratories, Inc., 115 East Twenty-Third Street, New York.

The Peerless Ultra Short Wave Diathermy, Model UW2M, is recommended for medical and surgical use. According to the firm, it has the same circuit and same identical electrical characteristics as the accepted Peerless Unit, Model UW2A (described in THE JOURNAL, Feb. 20, 1937, p. 639) except for the fact that the number of input control steps has been changed from five to nine and that the style of the cabinet has been altered.

The unit is equipped with terminal outlets to permit the use of inductance cable, air-spaced treatment arms, cuff electrodes, metal orificial electrodes and electrosurgical accessories for cutting and coagulation. The electrical design permits the use of all these modalities from one pair of terminals with no switching devices being used.

The wavelength is approximately 6 meters in this two-tube machine, which utilizes a self-excited, push-pull oscillator circuit. The patient's circuit is inductively and capacitatively coupled to the oscillator circuit. Tuning of the patient's circuit is accomplished with a double condenser with plates moving parallel, which tune the two branches of the patient circuit simultaneously. For consistency of performance and maximum life to tubes and other component parts, a switching arrangement is incorporated in the machine which enables the physician to adjust the operating voltages on filament grid and plate to line voltage variations within a range of from 105 to 135 volts in the power supply line.

A two-circuit line switch is employed as follows: First stage supplies the current to the filament and in the second stage connects the supply to the plate current of the tube. The physician is not likely to make any error in switching on the currents, as the rotation is automatic. This avoids shock to the tube which results from simultaneous application of the two currents. It also permits the use of a foot switch in the plate circuit only while the filament circuit is on, which is preferable for surgical use.

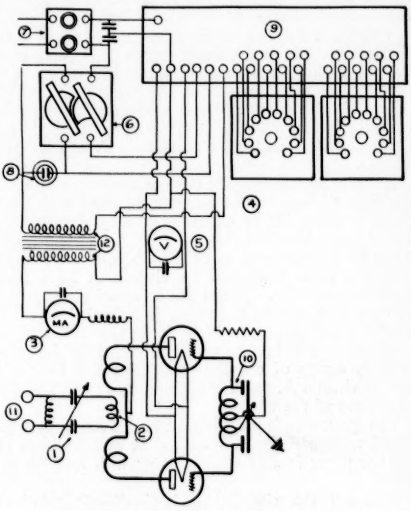
Peerless Ultra Short Wave Unit, Model UW2M.

When this unit is operated under full load, it draws not more than 1,200 watts from the 60 cycle, 115 volt alternating current supply line and delivers about 540 watts. The output was determined by means of a pair of metal plates attached to the terminals of an incandescent lamp. These plates are provided with a suitable condenser to permit tuning to resonance. The light output of the lamps or the energy delivered to them is measured by means of a photronic light sensitive cell, connected to a sensitive micro-ammeter. No claim is made by the firm that this type of measurement constitutes an exact equivalent of power available for therapeutic purposes.

The temperature rise of the transformer, after the machine had been operated at full load for two hours, was 32 C. Other temperatures in the cabinet were in proportion. The maximum rise is above the oscillating tubes. This rise was 42 C. Burns may be produced with this as with any other short wave unit but may be avoided by the use of ordinary precautions. The weight is about 160 pounds.

The original accepted model was submitted for use with cuff electrodes. In addition, the new model offers inductance cable and air spaced technics. The firm submitted evidence relative to the latter two technics, since it was felt that the cuff technic would give results similar to those with the already accepted model. The new tests were performed by an investigator acceptable to the Council.

Two male students, weighing 150 and 165 pounds respectively, were the subjects. A cannula was introduced at the midpoint of the thigh and inserted for a distance of two inches or until the bone was encountered. Temperature readings were made by means of thermocouples inserted into the cannula. The thermocouples were constructed by placing constantan and copper wires into the end of a hypodermic needle. The copper constantan junction was kept at 0 C. by means of a vacuum bottle full of crushed ice. The couples were calibrated against a mercury thermometer certified and calibrated by the National Bureau of Standards. Potential differences were read from a Leeds and Northrup portable potentiometer of requisite sensitivity. The accuracy was believed to be within one tenth of a degree.



Schematic diagram of circuit.

The air-spaced electrodes were from 1¼ to 2 inches from the skin, and 9 inches apart from center to center. They were curved.

Averages of Six Observations, Air-Spaced Technic, with 5 Inch Diameter Electrodes

Temperatures			
Deep Muscle		Oral	
Initial	Final	Initial	Final
99.1	105.7	98.7	99.2

Averages of Six Observations, Cable Technic

Temperatures			
Deep Muscle		Oral	
Initial	Final	Initial	Final
98.9	104.7	99.3	99.8

When testing with the cable technic, approximately four turns of the cable were used, spaced approximately 1¼ inches apart, center to center. The distance between the coil and the thigh was spaced approximately 1¼ inches with felt, toweling or wooden spacers.

Evidence has been submitted with regard to pelvic heating. The technic for pelvic heating consisted in using a metal vag-

inal electrode with a hollow stem holding a thermometer and a large condenser pad placed on a shelf about 6 inches from the patient's sacrum. Treatment was administered to comfortable tolerance of the patient. In the series of eleven cases treated in the foregoing manner, the average final temperature was 107.5 F.

The unit was tried out in a clinic acceptable to the Council and rendered satisfactory service.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Peerless Ultra Short Wave Unit, Model UW2M, for inclusion in its list of accepted devices.

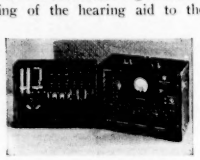
RADIOEAR ACCEPTABLE

Manufacturer: E. A. Myers & Sons, 306 Beverly Road, Mount Lebanon, Pittsburgh.

The Radioear consists of a microphone, intensifier and receiver (for bone and air) with the necessary connecting cords. It is assembled in the laboratory at Pittsburgh from duplicates of the patients' own selection of component parts with the use of the firm's Selex-A-Phone. This is essentially a "master hearing aid" with which the patient can try many or all of the various combinations of microphones, intensifiers and receivers (both bone and air) and under various voltages. These combinations are cut in or out by means of knobs and switches.

In order to purchase this type of hearing aid, the customer first has an analysis of his hearing aid requirements made by the Selex-A-Phone. Then the results of these tests are sent to the factory in Pittsburgh, where the characteristics of the original analysis of hearing aid requirements are matched in the acoustical laboratory maintained by the manufacturer. To accomplish this the separate components of the hearing aid are adjusted, prior to the overall adjustment, to which certain specified tolerances. These parts are then tentatively assembled, and the final matching and alining of the hearing aid to the desired characteristics is performed on the hearing aid as a whole. The composite or overall alinement is considered by the manufacturer to be an important part of the construction of the hearing aid. After the laboratory has determined that the completed instrument meets the required specifications, it is forwarded to the office from which the order originated and the patient may compare its amplification characteristics with those of the Selex-A-Phone by which the analysis of hearing aid requirements was originally made.

(1) Radioear De Luxe Model.



(2) Selex-A-Phone.

The manufacturer states that his responsibility does not end when the individual has satisfied himself that the finished instrument has the desired characteristics. The customer has the option at any time within thirty days from the date of delivery of selecting any other hearing aid characteristic available on the Selex-A-Phone which he may find is more suitable for his requirements. This privilege is made available to the customer regardless of the fact that his subsequent decision may entail the supplying of an entirely different type of hearing aid. These changes may involve different characteristics for every component part of the hearing aid. When these alterations are made, they involve rebuilding the hearing aid to the new characteristics in the laboratory. The size, weight, amplification characteristics and appearance of the resulting instrument may be radically different from the original selection. Under this policy, if any error in the original selection has been made, or if the customer finds another characteristic more desirable, the firm then assumes the obligation of rebuilding the hearing aid free of charge. At the end of the thirty day period, the hearing aid is not returnable for full credit. The firm deducts $35 from the purchase price to cover expenses incurred in assembling and testing the individual instrument at the laboratory.

Those units fitted by means of the Selex-A-Phone and coming to the attention of the Council's investigator appeared to give satisfactory service. The point is stressed by the firm that these instruments are all laboratory built.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Radioear Hearing Aid for inclusion in its list of accepted devices.

Council on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

NUTRADIET FRESH GREEN ASPARAGUS PACKED IN WATER

Distributor.—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

Description.—Canned asparagus, packed in water without added sugar or salt.

Manufacture.—Asparagus on which no insecticide spray has been used is graded for size and quality and only the larger spears are retained. They are cut to 4 inch lengths, washed in running water, blanched, dipped in cold water, and a definite number of spears are packed in each can, which is weighed also. Water is added and the containers are exhausted, sealed and processed. The asparagus is in cans within six hours after it is cut.

Analysis (submitted by manufacturer).—Moisture 93.3%, total solids 6.7%, ash 0.4%, fat (ether extract) 0.2%, protein (N × 6.25) 2.8%, crude fiber 0.6%, carbohydrates other than crude fiber (by difference) 2.7%.

Calories.—0.24 per gram; 7 per ounce.

Claims of Manufacturer.—For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

STOKELY'S FOR BABY SPECIALLY PREPARED STRAINED BEETS

Manufacturer.—Stokely Brothers & Company, Indianapolis.

Description.—Strained beets, seasoned with salt, retaining in high degree the natural vitamin and mineral content.

Manufacture.—Selected, fresh tender beets are thoroughly washed and inspected, steamed in a closed kettle, peeled, sieved in a steam atmosphere, salt is added, and the product is canned and processed as described for Stokely's Strained Green Beans (THE JOURNAL, May 26, 1934, p. 1763).

Analysis (submitted by manufacturer).—Moisture 85.7%, total solids 14.3%, ash 1.2%, sodium chloride 0.54%, fat (ether extract) 0.2%, protein (N × 6.25) 1.4%, crude fiber 0.6%, carbohydrates other than crude fiber (by difference) 10.9%, alkalinity number (cc. normal acid per gram ash) 16.4.

Calories.—0.5 per gram; 14 per ounce.

Vitamins.—The natural vitamin content is claimed to be retained in large measure in the manufacturing process by the use of equipment and procedure which exclude incorporation of air.

VALLEY LEA BRAND EVAPORATED MILK

Manufacturer.—Producer's Creamery, Marion, Ind.

Description.—Unsweetened, sterilized, evaporated milk.

Manufacture.—Milk from company inspected farms is tested, preheated, evaporated, homogenized, cooled, standardized, filled into cans, sealed, and sterilized.

Analysis (submitted by manufacturer).—Moisture 73.8%, total solids 26.2%, ash 1.6%, fat (ether extract) 8.2%, protein (N × 6.38) 7.0%, lactose (by difference) 9.4%.

Calories.—1.4 per gram; 40 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 21, 1938

POLIOMYELITIS INFECTIVITY OF HUMAN STOOLS

The recent isolation of the virus of poliomyelitis from human feces [1] is presumably additional evidence that viable virus can pass through the gastrointestinal tract. There is as yet no experimental evidence that this virus proliferates in the intestine. Nevertheless, identification of the virus in human stools suggests that certain precautions should be taken that are now generally considered unnecessary.

Following the successful transmission of poliomyelitis to monkeys, tests were made as early as 1912 of the infectivity of fecal poliomyelitic material. Kling, Pettersson and Wernstedt [2] of Stockholm, Sweden, reported the successful inoculation of monkeys by the intracerebral injection of colonic washings from infants during both the acute and the convalescent period of infantile paralysis. This result was confirmed three years later by Sawyer.[3] Since lethal paralytic effects can be produced by control intracerebral injection of normal fecal extracts, this earlier apparently successful isolation and identification of the virus in human stools was generally discredited.

Last year, Harmon [4] repeated these early tests under adequately controlled conditions and was able to isolate and identify poliomyelitis virus in the stools of four of twenty patients tested. The most convincing evidence of intestinal infectivity, however, is currently reported by Dr. J. D. Trask [1] and his co-workers of the department of pediatrics at Yale University. The Yale pediatricians tested fecal infectivity by the less toxic method of intraperitoneal injection in monkeys. In their technic, 120 cc. of distilled water was added to the whole stool of the infant and the mixture agitated and allowed to stand for two hours at room temperature. The supernatant fluid (90 cc.) was then pipetted off into a rubber stoppered flask and partially sterilized by the addition of 15 per cent ether (U. S. P.). After storage for twenty-four hours at refrigerator temperature, 30 cc. of the etherized supernatant fluid was injected intraperitoneally into monkeys. As an alternate method the ether was removed and the fluid reduced to about a tenth of its original volume by vacuum distillation. This concentrate was also to be used for control intracerebral injections. Of the eleven monkeys thus far injected intraperitoneally with the etherized supernate, but one developed peritonitis and bacteremia.

By this intraperitoneal technic the Yale pediatricians successfully recovered viable poliomyelitis virus from the stools of an 18 months old infant on the second, fourteenth and twenty-fifth days of the disease. Monkeys thus inoculated usually had typical paralytic symptoms on the seventh day. Paralytic symptoms and histologic lesions were characteristic of experimental poliomyelitis in this animal. Successful passage to a second monkey was accomplished by routine technics. Additional work must be done, however, before a final interpretation of these results is possible.

1. Trask, J. D.; Vignec, A. J., and Paul, J. R.: Proc. Soc. Exper. Biol. & Med. **38**: 147 (Feb.) 1938.
2. Kling, C.; Pettersson, Alfred, and Wernstedt, W.: Communications Inst. méd. Etat Stockholm **3**: 5, 1912.
3. Sawyer, W. A.: Am. J. Trop. Dis. & Prev. Med. **3**: 164, 1915.
4. Harmon, P. H.: The Use of Chemicals as Nasal Sprays in the Prophylaxis of Poliomyelitis in Man, J. A. M. A. **109**: 1061 (Sept. 25) 1937.

THE EFFECT OF ANESTHETICS ON HEPATIC FUNCTION

The hazard of operative procedures in patients with diseased livers suggested the desirability of determining the state of hepatic function before subjecting such patients to the combined risk of anesthesia and operative trauma. Rosenthal and Bourne [1] have pointed out that the changes which anesthetics produce in the liver undoubtedly occur also in most other organs and are but a reflection of the widespread depression of cell activity resulting from certain anesthetics. The appraisal of the functional capacity of the liver is formidable because of the multiplicity and diversity of its functions. The various functional tests thus far available could do no more than reflect the state of one of these functions. A satisfactory answer to the query therefore could be reached only through study of several of the hepatic functions. There is, however, no correlation between the type of pathologic lesion present in the liver and the function that is disturbed. According to Soffer,[2] one positive test is as significant an index of the presence of damage as would be the case if all the tests were abnormal.

The excretion tests are based on the ability of the liver to remove from the blood stream certain dyes that are excreted in the bile. Bromsulphalein, a dye synthesized by White, was found by Rosenthal and White to be excreted rapidly in the bile. Eighty-five per cent could be recovered in the rabbit's bile within one hour after an intravenous injection. Normally the liver can remove this dye almost completely from the blood within fifteen minutes after injection, but if

1. Rosenthal, S. M., and Bourne, Wesley: The Effect of Anesthetics on Hepatic Function, J. A. M. A. **90**: 377 (Feb. 4) 1928.
2. Soffer, L. J.: Present Day Status of Liver Function Tests, Medicine **14**: 185 (May) 1935.

the liver is injured the dye is not taken up and remains in the blood for a long time. The investigators found that the dye when injected in dogs in doses of 5 mg. per kilogram of body weight was no longer recoverable from the blood fifteen minutes after its injection. In their experiments on dogs, utilizing the bile pigment disturbances and the bromsulphalein test, they found that brief periods of anesthesia with chloroform are sufficient to produce both immediate and delayed toxic effects on the liver. Administration of chloroform for one-half hour causes injury that requires eight days for functional recovery; two hours of anesthesia requires six weeks for return to normal. Ether produces a definite but transitory impairment to function. Nitrous oxide and ethylene, administered through a mask, did not produce any change in the bromsulphalein test for hepatic function or any disturbances in the bile pigment. Nitrous oxide and ethylene given in a closed chamber with poor oxygenation caused both immediate and delayed toxic effects on the liver. Cyanosis in itself, they say, was found to increase the toxicity of anesthetics on the liver. The authors feel that ethylene would seem to be the anesthetic of choice for operation in cases of severe disease of the liver.

Robertson, Swalm and Konzelman [3] concluded on the basis of their clinical studies in 118 cases that the bromsulphalein excretion test and the icteric index determination most frequently agree with the clinical picture. Coleman,[4] in a recent communication, reports a series of one hundred surgical cases which were studied relative to the effect of anesthesia on hepatic function. The bromsulphalein dye excretory test was used, 10 per cent or less being accepted as a normal retention. It was found that avertin with amylene hydrate produces hepatic damage in a higher percentage of cases and to a greater degree than nitrous oxide, ether vapor anesthesia, nitrous oxide and oxygen, spinal, local, and open ether anesthesias. The liver is slower in recuperating from the damage produced by avertin with amylene hydrate than from the other four types of anesthesia which produced hepatic damage. Nitrous oxide and oxygen results in damage to the liver in a smaller percentage of the cases than nitrous oxide and ether vapor, and spinal anesthesia; however, the damaged liver from nitrous oxide and oxygen recuperates at about the same rate as the liver damaged by nitrous oxide and ether vapor. Local anesthesia did not produce liver damage. Avertin with amylene hydrate was found to be most toxic to the liver, and, in order of decreasing toxicity, nitrous oxide and ether vapor, spinal, nitrous oxide and oxygen, and local anesthesia. The longer the anesthesia and the older the patient, the greater will be the chances of hepatic damage from an anesthetic. If impaired function exists prior to the administration of anesthetics, it is a certainty that additional damage to the liver will result. Coleman found also that patients with uncomplicated and smooth convalescence seldom gave evidence of hepatic damage. If a rise in the percentage of retention of the dye occurs after the first postoperative day, a complication will usually be found. Excluding infections of the liver and biliary tract, pulmonary tuberculosis, chronic sepsis and overwhelming infections, surgical cases with an associated infection such as acute appendicitis, abscesses and wound infections will not show evidence of impaired hepatic function resulting from the infection per se.

The need for a more or less standardized test for hepatic function has been felt for some time. Some of the unexplained deaths following operations for gallbladder disease were no doubt due to grave impairment of the hepatic function. The van den Bergh test and the icteric index proved their value in the management of the jaundiced patient; in the absence of jaundice the bromsulphalein test is probably most valuable. In view of the enormous part played by the liver in various defense mechanisms of the body, the determination of its functional status might well be included as a routine procedure among preoperative biologic analyses.

3. Robertson, W. E.; Swalm, W. A., and Konzelman, F. W.: Functional Capacity of the Liver: Comparative Merits of the Five Most Popular Tests, J. A. M. A. **99**: 2071 (Dec. 17) 1932.
4. Coleman, F. P.: The Effect of Anesthesia on Hepatic Function, Surgery **3**: 87 (Jan.) 1938.

OPERATIONS: FREQUENCY AMONG 9,000 FAMILIES

Scientific surgery has advanced greatly and the number of operations has increased vastly in the past fifty years. The extent to which this has occurred is perhaps not generally appreciated. Matas has stated that in 1881 there were 172 operations among 5,309 admissions to the Charity Hospital in New Orleans, and two thirds of these were of an emergency character. In the same hospital in 1923 there were 16,405 operations among the 20,565 admissions—a striking illustration of the growth of surgery. Similarly, according to Collins,[1] United States Army and Navy records indicate that there are now about twice as many operations per thousand men in those organizations as in 1910. There is no accurate information available on the annual number of surgical operations in the United States.

The frequency of surgery in a given population group may be expressed either as the annual number of surgical operations per thousand persons under observation or as the percentage of all cases of illness that were treated surgically. The recent study by Collins of the nature and frequency of operations is based on a nationwide periodic canvass of illness among about 9,000 families involving 38,544 person years of observation. This was the same group of white families in 130 localities in eighteen states which was studied by the Committee on the Costs of Medical Care and the United States Public Health Service. For the total 38,544

1. Collins, S. D.: Frequency of Surgical Procedures Among 9,000 Families, Based on Nationwide Periodic Canvasses, 1928-1931, Pub. Health Rep. **53**: 587 (April 22) 1938.

person years there were 2,623 surgical operations, or an annual rate (adjusted for age) of sixty-five operations per thousand persons. This crude rate gives a startling picture. If it were representative of the full picture it would mean that every individual, on the average, would have one operation approximately every fifteen years or would have four operations altogether, assuming a life expectation of sixty years. But this does not represent a correct interpretation of what actually occurs. The operations included both primary and contributory causes of illness and in a few instances two or more operations in connection with the same diagnosis. Furthermore, the age distribution of the group was such as to give a preponderantly youthful sample and a group which contained two distinct surgical peaks. There were, in fact, approximately twice as many individuals included in the survey between 25 and 45 as in the group of 45 and over, and more under 5 years of age than between 15 and 25, a significant deviation from the age distribution of the general population.

The surgical procedures listed included everything from a major abdominal operation to lancing a boil or removing a wart; of the sixty-five operations per thousand, eighteen were tonsillectomies and adenoidectomies, seven settings of bone and nearly six appendectomies. The surgical peaks were accounted for by the high incidence of tonsillectomy in the age period from 5 to 9 and by increased surgery for female genital and puerperal diagnoses from 30 to 34. If operations in connection with injuries are considered as a unit they amounted to 20.3 per cent of the total, and the group of female genital and puerperal operations to 8.3 per cent. When these two are added to tonsillectomy and appendectomy, the four fairly specific types of operations made up about two thirds of all the surgical procedures.

The proportion of operations done as an emergency was not large. Because of the large number of nonemergency operations, Collins says, one would expect more surgery among higher income groups in which funds are available for medical care that is not immediately necessary. For males, operations were about twice as frequent among professional and business men as among unskilled laborers; clerks and skilled laborers fell between these two extremes. Similarly, Collins found that the frequency rates of surgery varied from fifty-two operations per thousand persons in families of annual incomes of less than $1,200 to ninety-four in families of $5,000 or more income. The proportion of operations was also higher in large cities than in rural areas, and the persons in the lowest income group that live in large cities likewise obtained more surgical treatment than those in the rural areas of similar economic status. Finally, this study showed that 61 per cent of all operations in the group had some hospital care; the other 39 per cent were done in the office, clinic or at home.

This interesting study constitutes a survey of certain phases of surgery in relation to the whole problem of illness. Any one who studies the statistical information available from the survey may manipulate it in a different manner; in view of the defective nature of the sample, from the point of view of age alone, the conclusions which can be deduced legitimately are seriously limited. Furthermore, since many of the surgical procedures were apparently nonemergency in nature and possibly of the "luxury" type, sweeping inferences on the relation to economic status do not seem justified. Possibly the next canvass of this nature can be devised to overcome some of these objectionable features in this otherwise interesting and valuable study.

Current Comment

HEREDITY AND OPHTHALMOLOGY

The island of Tasmania, with an area of 26,215 square miles and a population of 227,599, seemed to offer suitable conditions for a study of heredity in ophthalmic disease. Although its population is made up principally of peoples of purely British origin, the investigation, according to Hamilton,[1] was extremely difficult because of the reticence of many residents about their antecedents and because of the sparse and scattered nature of most of the settlements. Of 4,880 patients with eye disease seen by him in private practice during the previous five years 119, or roughly two and one-half in every hundred, proved to have authentically hereditary disease. The diseases observed in these patients, as well as in those seen in hospital practice, represented a variety of conditions and were associated in many instances with a number of hereditary abnormalities of the nervous system, such as amaurotic family idiocy, Friedreich's ataxia and hereditary cerebellar ataxia. The problem, as far as it relates at least to Tasmania, is carefully considered from a number of points of view, including the sociological, educational, employment and welfare aspects. In the prevention of hereditary eye disease, Hamilton's observations that 37.7 per cent of the blind are suffering from hereditary disease of the eye is of great significance. The discussion of this problem follows the outline suggested by Franceschetti at the 1935 meeting of the International Association for the Prevention of Blindness: the collection of precise and complete statistics can be improved by the adoption of a universal form for examination and report on all blind persons admitted to the registry, by a universal definition of blindness, by the certification of the blind only by specially qualified medical practitioners, and finally by the authorization of the collection of accurate statistics by a select subcommittee. In Tasmania as elsewhere, Hamilton points out, Franceschetti's suggestion on the training of physicians in eugenics and the education of authorities and the public has received little support.

1. Hamilton, J. B.: The Significance of Heredity in Ophthalmology; Preliminary Survey of Hereditary Eye Diseases in Tasmania, Brit. J. Ophth. **22**: 19 (Jan), 83 (Feb.), 129 (March) 1938.

Furthermore, the extension of facilities for premarital consultation with regard to the presence or absence of inheritable disease will incur, Hamilton thinks, the disapproval of the populace, although sooner or later a stand must be taken to combat the evil results of the propagation of hereditary disease. Finally, after brief discussions of the value of increased use of social service workers and decrease in consanguineous marriages, Hamilton reviews the status of hereditary disease of the eye in the light of those countries which have passed sterilization laws and cites the conclusions of the Broche report on the sterilization of the hereditary blind. Certainly, at the very least, an intelligent understanding of such facts as are brought out in studies of this nature is essential.

LOCUS OF DEAMINIZATION

In the course of metabolism, the nitrogen of the absorbed amino acids is removed, converted to urea and largely excreted in this form. In the early years of the present century, feeding experiments showed that alanine was at times converted to lactic acid. The perfusion studies of Embden and Kraus [1] and, later, the striking investigations of Bollman, Mann and Magath [2] focused attention on the liver as the site where the removal of the amino group from amino acids occurred. As so frequently happens, newer experimental procedures frequently open new vistas with respect to function; for several years the method of surviving tissue slice cultures has been employed to extend the scope of information regarding cellular metabolism. Using this device, Krebs,[3] Kisch [4] and others have demonstrated that, as judged by oxygen uptake and ammonia production when amino acids are added to the nutrient medium, kidney is more active in deaminization than is liver. London and his co-workers,[5] through the use of the angiostomy technic, have called attention to the part played by the intestinal wall in producing ammonia from amino acids. Again, Graham, Houchin and Turner [6] have shown that the actively secreting mammary gland produces considerable quantities of urea, presumably from the metabolism of amino acids. These newer observations on the biochemical activity of various types of tissue are of fundamental significance; however, as Borsook and Jeffreys [7] point out, despite the enhanced activity of the kidney, the liver, by virtue of its large relative mass, still is to be considered the most important site of deaminization of amino acids. The recent study of Mason,[8] in which he failed to note any utilization of amino acids by the kidney in unanesthetized dogs, would seem to support the preeminent position of the liver in respect to this phase of the metabolism of amino acids.

1. Embden, G., and Kraus, F.: Biochem. Ztschr. **45**: 1, 1912.
2. Bollman, J. L.; Mann, F. C., and Magath, T. B.: Am. J. Physiol. **78**: 258 (Oct.) 1926.
3. Krebs, H. A.: Ztschr. f. physiol. Chem. **217**: 191, 1933; Biochem. J. **29**: 1620 (July) 1935.
4. Kisch, B.: Biochem. Ztschr. **280**: 41, 55, 1935.
5. London, E. S.; Dubinsky, A. M.; Wassilewskaja, N. L., and Prochorova, M. J., Ztschr. f. physiol. Chem. **227**: 223, 1934.
6. Graham, W. R., Jr.; Houchin, O. B., and Turner, C. W.: J. Biol. Chem. **120**: 29 (Aug.) 1937.
7. Borsook, Henry, and Jeffreys, C. E. P.: J. Biol. Chem. **110**: 495 (July) 1935.
8. Mason, M. F.: Proc. Soc. Exper. Biol. & Med. **37**: 111 (Oct.) 1937.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

State Medical Election.—Dr. Charles S. Smith, Nogales, was chosen president elect of the Arizona State Medical Association at its annual meeting in Tucson April 21-23. Dr. Harold W. Rice of Bisbee was installed as president. Other officers are Drs. Leslie R. Kober, Phoenix, vice president; Delamere F. Harbridge, Phoenix, secretary, and Clarence E. Yount, Prescott, treasurer.

CALIFORNIA

Two New Mental Institutes.—Construction will soon begin on two state mental health centers, one in Los Angeles and one near San Francisco, newspapers reported April 10. Authorized by the 1937 legislature, the centers will each cost about $1,500,000 and have a capacity of 300 beds. All mental cases will be cleared through the centers.

Lectures on Medical Sociology.—The division of medical history and bibliography of the University of California Medical School, San Francisco, recently sponsored a series of open forum meetings on medical sociology. Lecturers and their subjects were:

Paul Dodd, Ph.D., Cost of Medical Care.
E. F. Penrose, Ph.D., Theory of Health Insurance.
E. H. Huntington, Ph.D., Adequate Health Insurance Benefits.
Dr. Philip K. Brown, Health Insurance in the United States.
Albert H. Mowbray, A.B., Actuarial Principles of Insurance and Health Insurance.
Dr. William P. Shepard, The Physician's Place in the Community.
Dr. Hans A. Meyer, Health Insurance in Germany.
Dr. John B. de Cusance M. Saunders, Health Insurance in Great Britain.
Dr. Thomas Henshaw Kelly, Organized Medicine and Health Insurance.
Dr. Eugene S. Kilgore, Relationship of Government to Medicine.

CONNECTICUT

Lilly Award to Dr. White.—Abraham White, Ph.D., assistant professor of physiologic chemistry, Yale University, New Haven, received the $1,000 prize and bronze medal of Eli Lilly and Company at the ninety-fifth annual session of the American Chemical Society in Dallas April 18 for his work on sulfur metabolism and protein hormones. Dr. White is a native of Cleveland; he graduated at the University of Denver and later studied at the University of Michigan. He joined the faculty at Yale as instructor in 1933 and became assistant professor last year.

State Medical Meeting at Groton.—The one hundred and forty-sixth annual meeting of the Connecticut State Medical Society will be at the Hotel Griswold, Groton, June 1-2, under the presidency of Dr. Charles H. Turkington, Litchfield. The speakers will include:

Lieut. Allan S. Chrisman, medical corps, U. S. Navy, Submarine Escape Training.
Dr. Theodore G. Klumpp, Washington, D. C., chief medical officer, Food and Drug Administration, U. S. Department of Agriculture, Drug Problems.
Dr. Francis M. Rackemann, Boston, Skin Tests to Foods and Dusts.
Dr. Roy W. Mohler, Philadelphia, Gonorrhea in Women.
Dr. Abernethy Benson Cannon, New York, Cutaneous and Systemic Manifestations of Lymphogranuloma Inguinale and Its Differential Diagnosis.
Dr. Aubrey O. Hampton, Boston, Roentgenological Signs of Bronchial Occlusion, Their Differential Diagnosis and Treatment.
Charles H. Durfee, Ph.D., Wakefield, R. I., Reeducation of the Problem Drinker.
Dr. John L. Rice, New York, Syphilis Control in New York City.
Dr. William Harley Glafke, New York, Changing Attitudes in the Treatment of Peptic Ulcer.
Dr. Richard Townley Paton, New York, Motion Pictures of Eye Operations.
Dr. Bernard B. Raginsky, Montreal, Hypnotism and Its Relation to Anesthesia, with Demonstrations.

A symposium on psychiatry and general medicine will be presented by Drs. Charles G. Barnum, Groton, and Eugen Kahn, New Haven, and one on psychiatric service for the community by Drs. Lloyd J. Thompson, New Haven, and Clifford D. Moore, Newtown. Frederic C. Walcott, state commissioner of welfare, will address the annual dinner of the society on "Humane Resources of Connecticut." The Connecticut Association of Medical Examiners and the Connecticut Occupational Therapy Association will also meet. The Hezekiah Beardsley Pediatric Club will be addressed by Dr. Joseph

C. Aub, Boston, on "Endocrine Abnormalities in Childhood." Dr. Eleanor J. T. Calverley, Hartford, will discuss "Medical Experiences in Arabia" at a luncheon of the Women's Medical Society Wednesday morning. The annual meeting of the house of delegates of the state medical society will be held at New Haven May 25, in accordance with a newly adopted plan.

GEORGIA

Personal.—Dr. Abram J. Davis, director of health of Burke County, was elected president of the Southeast Georgia Public Health Association at its meeting April 9 in Waynesboro.—— Dr. William L. Gilbert, health officer of Fulton County, Atlanta, has resigned on account of ill health but will continue in the position until his successor has been named.

University News.—Crawford W. Long Day was celebrated at the University of Georgia, Athens, March 30. Dr. George A. Traylor, Augusta, president of the Medical Association of Georgia, gave an address. The prize of $25 offered by the Crawford W. Long Memorial Association to the undergraduate student of the university presenting the best paper on the subject "Why I Wish to Be a Doctor" was awarded to Mr. William Russell, Athens.

Society News.—Dr. John L. Dorough, Monroe, addressed the Walton County Medical Society in Monroe, recently, on "Syphilis as It Relates to Cooks and Other Handlers of Food." ——Dr. John R. Martin, Chattanooga, Tenn., discussed "Diagnosis and Treatment of Pathologic Vaginal Bleeding" before a recent meeting of the Catoosa-Dade-Walker Counties Medical Society in Lafayette.——Dr. Otis R. Thompson, Macon, discussed "Human Sterility" before the Macon Medical Society of Bibb County April 5.——At a meeting of the Thomas County Medical Society in Thomasville recently Drs. Benjamin A. Wilkinson, Tallahassee, Fla., spoke on "Pneumonia During Childhood" and Charles H. Ferguson, Thomasville, "Serum Therapy in Pneumonia."

Railroad Surgeons' Meeting.—The eighteenth annual meeting of the Surgical Association of the Atlanta and West Point Railroad Company, the Western Railway of Alabama and the Georgia Railroad was held at the Atlanta-Biltmore Hotel, Atlanta, March 24. Guest speakers included Drs. Oliver C. Wenger, U. S. Public Health Service, on syphilis, and William J. Lancaster, superintendent and medical director, relief department, Atlantic Coast Line Railroad, Wilmington, N. C. Dr. Richard Binion, Milledgeville, delivered the presidential address, on "Surgical Management of Head Injuries."

ILLINOIS

Society News.—The city medical society held a special meeting on syphilis in Peoria April 27; the speakers were Reuben L. Kahn, Sc.D., Ann Arbor, on "Interpreting Paradoxical Serum Reactions in Syphilis"; Dr. Albert E. Russell, Washington, D. C., "Syphilis in Industry," and Dr. David C. Elliott, Springfield, "Syphilis and Its Relation to Public Health." Dr. Herbert R. Edwards, New York, discussed "Tuberculosis Case Finding" before the society May 3 and Dr. Maxim Pollak, Peoria, "Lung Cancer."——Dr. John T. Gernon, Chicago, addressed the McDonough County Medical Society at Macomb April 20 on "Medical and Surgical Consideration of Renal Calculi."——At a meeting of the Will-Grundy County Medical Society April 20 Dr. G. Henry Mundt, Chicago, spoke on "Management of Chronic Nasal Infection."

Chicago

Robber Calls on Pregnant Women.—The Chicago Police Department has reported that a man has been making calls on pregnant women claiming that he was sent by the city or state health department, or some hospital in the vicinity, or the WPA to examine them. He sends the patient in another room to prepare for the examination and then proceeds to rob them of such money or valuables as he can find. The man has so far given no name, he is dark complexioned, about 40 years of age, 5 feet 6 inches tall, weighs about 130 pounds, has gray hair about the temples and wears dark horn-rimmed glasses. He is well dressed, with a blue suit, black oxfords and light gray fedora hat. It is also reported that he has been operating the same racket in Toledo and some other cities. The police department should be notified if this man again makes his appearance.

Research on Psychiatry.—The Rockefeller Foundation has given $150,000 to the University of Chicago over a period of three years and extended its grant to the Chicago Institute for Psychoanalysis for a period of five years to support research in psychiatry. The gift to the university supplements the work of a gift of $168,000 three years ago which financed the establishment of a twelve bed psychiatric unit in the university clinics, staffed by a group of five physicians. Dr. David Slight, professor of psychiatry, is in charge. In addition to the new grant to the Institute of Psychoanalysis, $20,000 has been made available for institute fellowships to be awarded young psychiatrists who hold research or teaching posts in psychiatry at universities or other institutions. The institute was founded five years ago with Dr. Franz Alexander as director. The research program has covered the study of emotional factors in the causation of gastrointestinal disturbances, chronic high blood pressure, asthma and hay fever and on the therapy of such cases, the psychoanalytic technic being used.

Rush Alumni Reunion.—The Rush Medical College of the University of Chicago will hold its alumni assembly at the college June 6-7. Clinics covering the specialties will be held at Presbyterian and Cook County hospitals and the Central Free Dispensary, and general discussions will be presented by the following:

Dr. Richard K. Gilchrist, Pathology of Cancer of the Rectum.
Dr. Adrien H. P. E. Verbrugghen, Treatment of Acute Brain Injury.
Dr. Ernest E. Irons, Etiology and Pathology of Aspiration Pneumonia.
Dr. George W. Hall, Relationship Between Mental and Surgical Symptoms.
Dr. Gladys R. H. Dick, Scarlet Fever Control.
Dr. William A. Thomas, Water Balance in Medicine and Surgery.
Drs. Willard O. Thompson and Norris J. Heckel, Use and Abuse of Hormone Therapy in Undescended Testicle and Hypogenitalism.
Dr. Edward D. Allen, Endometriosis.
Dr. Carl O. Rinder, Hypoglycemia.
Dr. Archibald L. Hoyne, Therapy of Acute Poliomyelitis.
Drs. Arno B. Luckhardt and Jay B. Carter, Ethylene Anesthesia.
Dr. Dean Lewis, Baltimore, Endocrinology of Surgery.
Dr. Albert H. Montgomery, When Not to Operate in Acute Appendicitis.
Dr. Sidney A. Portis, Clinical Significance of Cholecystography.

Dr. Lewis will also address the annual banquet at the Drake Hotel Tuesday evening; Dr. George W. Hall will be the toastmaster.

INDIANA

New Department of Industrial Hygiene.—The state department of public health has created a new department of industrial hygiene with Dr. Louis W. Spolyar, Indianapolis, in charge. Expected to be in operation by July 1, the new department plans as its first activity a general survey of industries of the state and a classification of them as to specific type of employment and the number of persons engaged. Later one health hazardous industry will be selected for detailed study and survey as to the actual amount of industrial disease, according to the state medical journal.

Annual Graduate Course.—The annual graduate course of the Indiana University School of Medicine, Indianapolis, and the Indiana State Medical Association will be held at the medical school May 23-27. The specialties will be covered in clinics, laboratory demonstrations, and clinico-pathologic conferences and the speakers, according to a preliminary program, include Vilhjalmur Stefansson, Ph.D., New York; Drs. Philip C. Jeans, Iowa City; Charles F. McKhann, Boston; Henry G. Poncher, Chicago; James S. Plant, Newark, N. J., and Arthur E. Hertzler, Kansas City. Representatives of the U. S. Army are also scheduled to speak. The county secretaries, state pediatric society and Alpha Omega Alpha will attend special dinners during the session.

IOWA

Annual Renewal Fees Due Before June 1.—All licenses to practice medicine and surgery in Iowa expire annually on June 30. To renew such a license a licentiate must make a written application to the state department of health before June 1, enclosing the renewal fee of $1. If a license expires by reason of the licentiate's failure to renew it, it can be reinstated without reexamination only on the recommendation of the state department of health and the payment of the overdue fees.

New Director of Emergency Relief.—Dr. Channing G. Smith, Granger, has been appointed medical director of the Iowa Emergency Relief Administration, succeeding Dr. Thomas C. Denny, Des Moines. Dr. Smith was president of the Iowa State Medical Society in 1931-1932.

KANSAS

Personal.—Dr. Clyde W. Miller has resigned as superintendent of the Sedgwick County Hospital, Wichita, effective May 1.——Dr. Robert C. Hutcheson, Elk Falls, who has been practicing for more than fifty years, was made an honorary member of the Elk County Medical Society at a meeting in Howard March 3.

The Porter Lectureship in Medicine.—The eighth course of lectures under the Porter Lectureship in Medicine was given by Dr. William Boyd, professor of pathology, University of Toronto Faculty of Medicine, Toronto, April 19-20. One lecture was given April 19 on "Bronchial Carcinoma" and two April 20 on "Growth, Normal and Abnormal" and "Nephritis."

MASSACHUSETTS

Course in Medicomilitary Training.—A graduate course for training medical department reserve officers in medicomilitary subjects will be held at the Harvard Medical School, Boston, June 1-14. The course has been planned to afford clinical and didactic graduate instruction in subjects which will be of practical value to medical reserve officers in their daily practice and in training them for emergency duties as army officers. The charges usually made for graduate courses have been omitted by the university and the only payment required will be the regular registration fee of $5.

State Medical Meeting at Boston.—The one hundred and fifty-seventh annual meeting of the Massachusetts Medical Society will be held at the Hotel Bradford, Boston, May 31-June 2, under the presidency of Dr. Channing Frothingham, Boston. The following will speak, among others:

Dr. Arthur M. Shipley, Baltimore, Treatment of Peritonitis Complicating Appendicitis.
Dr. Owen H. Wangensteen, Minneapolis, Acute Bowel Obstruction: Its Recognition and Management.
Dr. Robert L. DeNormandie, Boston, Cesarean Section in the State of Massachusetts in the Year 1937.
Dr. John G. Downing, Boston, Are Patch Tests of Real Value in Dermatology?
Dr. Henry Jackson Jr., Boston, The Protean Character of the Leukemoid States.
Dr. Thomas H. Lanman, Boston, The Surgical Significance of Urinary Incontinence in Infancy and Childhood.
Dr. Edward D. Churchill, Boston, The Surgical Treatment of Bronchiectasis.
Dr. Elliott P. Joslin, Boston, The Diabetic Situation in Massachusetts.
Dr. James Burns Amberson Jr., New York, The Significance of Latent Forms of Tuberculosis.
Dr. Frank H. Krusen, Rochester, Minn., Physical Measures of Value to the General Practitioner in the Treatment of Arthritis.
Dr. Frederick O. Coe, Washington, D. C., The Roentgen Ray Therapy of Inflammatory Lesions.

Dr. Thomas Parran, Washington, D. C., will give an address Tuesday evening on "Work and Aims of the Public Health Service," and Dr. David Riesman, Philadelphia, will deliver the Shattuck Lecture on "America's Contribution to Nosography." The annual oration will be delivered Thursday afternoon by Dr. Allen G. Rice, Springfield, on "The Passing of Surgical Yeomen." A program of entertainment has been planned for the ladies, including luncheon, tea, visits to historic places of interest and a tour of the Isabella Stuart Gardiner Museum.

MICHIGAN

School Health Education Institute.—The division of hygiene and public health and the extension service of the University of Michigan, cooperating with the Michigan School Health Association, will conduct a school health education institute May 27-28 at the Michigan Union of the university, Ann Arbor. The speakers will include:

Dr. John Sundwall, Trends in School Health Education.
James B. Edmonson, Ph.D., dean, School of Education, University of Michigan, Some Debatable Issues in Health Education.
Dr. Thurman B. Rice, Indianapolis, Seekers of Health.
Dr. Henry Cook, Flint, The Medical Profession and the Public Schools.
Dr. Don W. Gudakunst, Lansing, The State Department of Health and Health Education.
Dr. Bernard W. Carey, Detroit, The Michigan School Health Association: What It Stands For.
Dr. John W. Bean, Ann Arbor, The Physiological Basis of Health.
Dr. Warren E. Forsythe, Ann Arbor, Health Misconceptions.
Kenneth A. Easlick, D.D.S., Ann Arbor, A Six Point Program for the Improvement of Dental Health.
Dr. Paul H. Jordan, Ann Arbor, Child Guidance in the Public Schools.

MISSISSIPPI

State Medical Election.—Dr. James P. Wall, Jackson, was chosen president elect of the Mississippi State Medical Association at its annual meeting in Jackson April 21 and Dr. Joseph E. Green, Laurel, was installed as president. Other officers chosen were vice presidents: Northern district, Dr. Monterville Q. Ewing, Amory; central district, Dr. Richard B. Austin, Forest, and southern district, Dr. Benjamin T. Robinson, New Augusta. The next annual session will be held in Gulfport. A resolution was approved establishing a fund for indigent and disabled physicians.

NEW MEXICO

State Medical Meeting in Santa Fe.—The fifty-sixth annual meeting of the New Mexico Medical Society will be held at La Fonda Hotel, Santa Fe, June 6-8, under the presidency of Dr. Eugene W. Fiske, Santa Fe. Guest speakers announced are:

Dr. Felix P. Miller, El Paso, Texas, Prevention of Accidents.
Dr. Francis C. Goodwin, El Paso, Complicated Fractures.
Dr. James J. Gorman, El Paso, Jaundice: Its Significance as a Symptom.
Dr. Henry T. Safford, El Paso, Anal Infections.
Dr. Horton R. Casparis, Nashville, Tenn., Nutrition in Infants and Children.
Dr. Gerrit Heusinkveld, Denver, Subinvolution of the Uterus.
Dr. Verne C. Hunt, Los Angeles, Lateral Gastroduodenostomy in the Surgical Treatment of Duodenal Ulcer.
Dr. Harold C. Habein, Rochester, Minn., Intravenous Medication.
Dr. Gottlieb Werley, El Paso, Angina, Atherosclerosis and Food Allergy.
Dr. Thomas E. Carmody, Denver, Present Status of Treatment of Sinus Disease.
Dr. Arthur E. Smith, Los Angeles, Reconstructive and Plastic Surgery.
Dr. Arthur Elmer Belt, Los Angeles, Endocrinology of Prostatic Hypertrophy.
Dr. Frank R. Teachenor, Kansas City, Mo., Surgical Treatment of Cranial-Cerebral Injuries.

New Mexico physicians on the program are Drs. John R. Van Atta, Albuquerque, on "Short Wave Therapy"; Donat F. Monaco, Gallup, "Management of Intestinal Obstruction," and Lee M. Miles, Albuquerque, "Ectopic Pregnancy."

NEW YORK

New Home for Rochester Societies.—The Rochester Academy of Medicine recently raised a fund of $150,000 to enlarge its headquarters and to establish an endowment fund. The academy has received also as a gift the home of the late Edmund Lyon, philanthropist, presented by his daughters as a memorial to their parents. The home is a brick house on East Avenue, with thirty-two rooms and four acres of landscaped grounds. The first floor will be used as a lounge, the second will be remodeled for the academy's library and the third has an auditorium, which will be retained for small meetings. An addition will be built beside the old building providing an auditorium for 400 persons and a stackroom to open into the library room. The Medical Society of the County of Monroe and the Rochester Pathological Society will share the building with the academy. This will be the third home of the academy. The first was purchased in 1914 near the business district of the city and sold ten years later. The present home near the women's college of the University of Rochester has become inadequate. Dr. Albert D. Kaiser, president of the academy during the past year, is chairman of the building project. Dr. David B. Jewett, chairman of the library committee, is president for the coming year.

New home of Rochester medical societies.

New York City

British Medal to Dr. Schick.—The Addingham Gold Medal has been awarded by the University of Leeds, England, to Dr. Bela Schick, chief of the pediatrics department of Mount Sinai Hospital, in recognition of his development of the susceptibility test for diphtheria and other contributions to medicine. The medal was presented in absentia April 12 by the Lord Mayor of Leeds. Dr. Schick received the gold medal of the New York Academy of Medicine March 3 on the twenty-fifth anniversary of the announcement of the Schick test (THE JOURNAL, March 19, p. 906).

Dr. Goldwater Retires from Public Service.—Dr. Sigismund S. Goldwater, since 1934 commissioner, department of hospitals, New York City, has announced his retirement, but will continue in office until the appointment of his successor, according to the New York *Times*. Dr. Goldwater was superintendent of Mount Sinai Hospital from 1903 to 1916 and director from 1917 to 1929. He was commissioner of health of New York City from 1914 to 1918, and, in 1908, municipal expert in hospital construction and administration of New York. In 1908 he was president of the American Hospital Association, in 1913 vice president of the New York Academy of Medicine, in 1918-1921 vice president of the National Institute of Social Sciences and from 1924 to 1926 president of the American Conference on Hospital Service. He was medical counselor of the U. S. Veterans' Bureau in 1924. He is 65 years of age.

OHIO

Hospital News.—A new building was recently dedicated for the Toledo Convalescent Home for Crippled Children. It has facilities for eighty-eight children and cost $250,000. It is under the sponsorship of the Toledo Society for Crippled Children.

Lectureship Endowed.—Dr. William E. Lower, Cleveland, has given to the Academy of Medicine of Cleveland a fund to be used for a lectureship of general interest to the medical profession. Dr. Lower directed that the lecture deal with some recent development or research, if advisable, but not confined exclusively to any one branch of medicine.

Society News.—Dr. Frederick A. Coller, Ann Arbor, will discuss "Water Balance in Surgical Patients" before the Academy of Medicine of Cincinnati May 24.——Dr. Claude S. Beck, Cleveland, addressed the annual meeting of the Cleveland Academy of Medicine May 20 on "Surgery of the Heart."——Dr. George I. Bauman, Cleveland, addressed the Summit County Medical Society, Akron, May 3 on osteomyelitis.——At a meeting of the Marion Academy of Medicine March 1 Dr. Karl D. Figley, Toledo, spoke on "Management of Pollen Therapy in Hay Fever and Asthma."——Dr. John A. Fraser, East Liverpool, addressed the Columbiana County Medical Society, Lisbon, March 8 on "Analgesia and Anesthesia in Obstetrics."——Dr. Daniel G. Sanor Jr., Columbus, addressed the Guernsey County Medical Society, Cambridge, March 3 on "Pathology of the Eye."——Dr. Harold G. Reineke, Cincinnati, addressed the Montgomery County Medical Society, Dayton, April 1 on "X-Ray Studies on Differential Diagnosis of Tuberculosis."——Dr. Charles E. Galloway, Evanston, Ill., addressed the Toledo Academy of Medicine, April 1, on "Lesions of the Cervix."

PENNSYLVANIA

Society News.—Dr. Samuel G. Henderson, Vandergrift, among others, addressed the Westmoreland County Medical Society, Scottdale, April 26, on "X-Ray Therapy in Carcinoma of the Breast."——Dr. Lester Hollander, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, May 5 on cancer and conducted a clinic on skin disease.

Annual Clinic.—The Westmoreland County Medical Society will conduct its annual clinic in New Kensington May 26. The speakers will be:

Dr. George P. Muller, professor of surgery, Jefferson Medical College, Philadelphia.
Dr. Clifford B. Lull, assistant professor of obstetrics at Jefferson.
Dr. Edward L. Bortz, associate professor of medicine, University of Pennsylvania Graduate School of Medicine.

C. William Duncan, columnist, Philadelphia *Evening Ledger*, will be the guest speaker at the dinner.

District Meeting.—The Seventh Councilor District Medical Society held its annual meeting at the Williamsport Country Club, Williamsport, May 13. Addresses were delivered by the following officers of the state medical society: Drs. Walter F. Donaldson, Pittsburgh, secretary; Frederick J. Bishop, Scranton, president, and David W. Thomas, Lock Haven, president-elect. Fifty year testimonials were presented to the following:

Dr. Reuben H. Born, Montoursville, fifty-one years in practice.
Dr. Solomon P. Hakes, Tioga, fifty years in practice.
Dr. Wesley F. Kunkle, Williamsport, fifty years in practice.
Dr. Henry H. Smith, Johnsonburg, fifty-one years in practice.

Dr. Arthur C. Christie, Washington, D. C., discussed "Social Trends in Medicine." The woman's auxiliary held its annual meeting the same day.

RHODE ISLAND

State Medical Meeting.—The one hundred and twenty-seventh annual meeting of the Rhode Island Medical Society will be held at the Rhode Island Medical Library, Providence, June 1-2, under the presidency of Dr. Walter C. Rocheleau, Woonsocket. Clinics will be held at the local hospitals. Included on the program are the following out of state speakers:

Dr Robert M. Zollinger, Boston, Surgical Aspects of Peptic Ulcer.
Dr. William C. Quinby, Boston, Clinical Aspects of Testicular Tumors.
Dr. Varaztad H. Kazanjian, Boston, First Aid Treatment of Injuries of the Face and Jaws.
Dr. Herbert M. Elder, Montreal, Diagnosis and Treatment of Peripheral Vascular Disease.
Dr. Israel M. Rabinowitch, Montreal, Diabetic Coma.
Dr. Alvah H. Gordon, Montreal, Diagnosis of Diseases with Coincident Enlargement of the Liver and Spleen.
Dr. Richard M. Smith, Boston, Do We Consider the Child as a Whole?
Cleophas P. Bonin, D.M.D., Boston, Pediatric Significance of Malocclusion.
Dr. John R. Richardson, Boston, Nasal Airways.
Dr. Clarence E. Bird, Louisville, Ky., Physiology, Pathology and Treatment of Diseases of the Esophagus.

The annual dinner will be addressed by Samuel T. Arnold, Ph.D., dean of Brown University, and John C. Cosseboom.

SOUTH CAROLINA

Historical Commission Appointed.—A commission has been organized in South Carolina to gather, preserve and publish when possible material on the history of the South Carolina Medical Association. Members are Drs. Robert E. Seibels, Columbia; Hillyer Rudisill Jr., Charleston; Linnaeus C. Shecut, Orangeburg; Daniel Lesesne Smith, Spartanburg, and Joseph I. Waring, Charleston, who is chairman. The appointment of the commission was approved at the annual meeting of the state association in 1937.

Public Health Meeting.—The South Carolina Public Health Association will hold its annual meeting at Myrtle Beach May 23-25, with headquarters at the Seaside Inn and conferences at the Gloria Theater. Dr. William K. Fishburne, health officer of Berkeley County, Moncks Corner, is president. The out of state speakers include Drs. Arthur T. McCormack, Louisville, Ky., Knox E. Miller, senior surgeon, U. S. Public Health Service, John A. Ferrell of the International Health Division, Rockefeller Foundation, New York, and Milton J. Rosenau, Chapel Hill, N. C. Other speakers will include:

Dr. William Weston Sr., Columbia, Food as a Public Health Factor.
Dr. William Atmar Smith, Charleston, The Public Health Aspect of Collapse Therapy in Tuberculosis.
Dr. Edgar A. Hines, Seneca, The Trend of Public Health Activities in Pediatric Practice.
Dr. Robert Wilson, dean, Medical College of the State of South Carolina, Charleston, General Practice and Its Relation to Public Health.

TENNESSEE

Medicomilitary Training Course.—Vanderbilt University School of Medicine, Nashville, will conduct a medicomilitary inactive duty training course for medical reserve officers of the U. S. Army and Navy in conjunction with its commencement clinic, June 6-7. The course will combine graduate work with a conference on medicomilitary problems. Enrolment is open to all reserve officers of the medical department of the army and navy and to medical officers of the National Guard.

UTAH

Personal.—Dr. Wendell Noall has been appointed health officer of Ogden, succeeding Dr. Wilburn J. Wilson.

Society News.—Dr. Ray T. Woolsey, Salt Lake City, addressed the Central Utah Medical Society at Salina April 6 on "Obstetrical Problems and the Cesarean Section."——At a meeting of the Weber County Medical Society recently Drs. June P. McBride discussed diseases of the retina and Howard K. Belnap, Ogden, cryptitis and its relation to fissure rectal abscess, fistula rectal abscess and fistula formation.

WISCONSIN

Dr. Harper Honored.—Dr. Cornelius A. Harper, Madison, has completed thirty-four years as state health officer, making him the senior public health official in the United States in point of unbroken service. A testimonial dinner was held in his honor April 1 by his department personnel and on April 10 he with others was honored at the Conference of State and Provincial Health Authorities of North America for having completed more than twenty-five years in public service. A native of Wisconsin, Dr. Harper graduated in medicine at Columbian University, now George Washington University School of Medicine, Washington, D. C., in 1893. He was appointed to the state board of health in 1902 and became

administrative head in 1904. He was president of the State and Provincial Health Officers of North America in 1908 and of the Wisconsin State Medical Society in 1930. He was a member of the state legislature in 1911.

Society News.—Dr. Raymond W. McNealy, Chicago, was the guest speaker before the Medical Society of Milwaukee County April 8 on "Medical and Surgical Treatment of Duodenal Ulcer."——Drs. Samuel Wick and Herbert J. Apfelberg, Wauwatosa, addressed the Milwaukee Neuro-Psychiatric Society March 24 on "Treatment of Schizophrenia with Insulin and Metrazol" and "Korsakoff's Psychosis" respectively.——Drs. Henry A. Sincock and Charles W. Giesen, Superior, addressed the Barron-Washburn-Sawyer-Burnett Counties Medical Society in March on "Prevention of Disease in Children Under One Year of Age" and "Diagnosis and Treatment of Common Skin Diseases" respectively.

GENERAL

Society News.—The American Association of Medical Social Workers will hold its national conference in Seattle, June 26-July 2.——Dr. Jon N. Kelly, La Porte, Ind., was elected president of the Northern Tri-State Medical Association at its annual meeting in Findlay, Ohio, April 12. Dr. Robert H. Elrod, Toledo, Ohio, was made vice president and Donald R. Brasie, Flint, Mich., secretary. Next year's meeting will be in South Bend, Ind.

Officers of Biological Societies.—At the annual meeting of the Federation of American Societies for Experimental Biology in Baltimore March 30-April 2, officers of the societies were elected as follows:

American Society of Biological Chemists: Glenn E. Cullen, Ph.D., Cincinnati, president, and Charles G. King, Ph.D., Pittsburgh, secretary.
American Physiological Society: Dr. Walter E. Garrey, Nashville, Tenn., president, and Dr. Andrew C. Ivy, Chicago, secretary.
American Society for Pharmacology and Experimental Therapeutics: Dr. Arthur L. Tatum, Madison, Wis., president, and Dr. Gustave Philip Grabfield, Boston, secretary.
American Society for Experimental Pathology: Dr. Charles Phillip Miller, Chicago, president, and Dr. Paul R. Cannon, Chicago, secretary.

The next meeting will be in Toronto, Canada, in March 1939.

Examinations in Obstetrics and Gynecology.—The oral, clinical and pathologic examinations for group A and group B applicants will be held by the American Board of Obstetrics and Gynecology in San Francisco June 13-14. An informal dinner for diplomates will be held Wednesday evening June 15 at the Palace Hotel, with Dr. William D. Cutter, secretary of the Council on Medical Education and Hospitals of the American Medical Association, Chicago, as the speaker. Tickets at $2.25 each may be obtained in advance from Dr. Joseph L. Baer, 104 South Michigan Avenue, Chicago, or at the door. Application blanks and other information may be obtained from Dr. Paul Titus, secretary of the board, 1015 Highland Avenue, Pittsburgh.

Meeting on Industrial Medicine.—The twenty-third annual meeting of the American Association of Industrial Physicians and Surgeons and the second annual Midwest Conference on Occupational Diseases will be held at the Palmer House June 6-9. The following, among others, will speak:

J. J. Bloomfield, P. A. sanitary engineer, and Richard T. Page, associate public health engineer, division of industrial hygiene, U. S. Public Health Service, Washington, D. C., Estimation of Potential Health Hazards and Their Control.
Wallace Waterfall, director of research engineering, the Celotex Corporation, Chicago, Noise in Industry.
Oliver G. Browne, general claims attorney, New York Central System, New York, Developments in Occupational Disease Legislation.
Voyta Wrabetz, chairman, Industrial Commission of Wisconsin, Madison, Wis., The Employability of the Silicotic.
Dr. Hart E. Fisher, medical director, Chicago Rapid Transit, Chicago, Hazards of Night Driving.

The Chicago Regional Fracture Committee, American College of Surgeons, will present a symposium Thursday afternoon, with the following speakers:

Dr. Kellogg Speed, Chicago, Fractures of the Carpal Navicular Bone.
Dr. Paul B. Magnuson, Chicago, Prevention versus Cure in Deformity Following Fracture.
Dr. Dean L. Rider, Riverside, Ill., March Foot.
Dr. Willis J. Potts, Oak Park, Ill., Treatment of Fractures of the Neck of the Femur by Pinning.
Dr. Hugh McKenna, Chicago, Treatment of Fractures of the Neck of the Femur.

Boston Wins in Health Conservation Contest.—The Chamber of Commerce of the United States in cooperation with the American Public Health Association has designated Boston as the winner in the city health conservation contest among cities with a population of more than 500,000. Additional awards in this group went to Cleveland and Pittsburgh. There were 263 entries in the 1937 contest and the awards are given to those cities which, in the opinion of a committee of health experts, have during the past year dealt most effectively with their local health problems. Activities considered in judging the contest include safety of water supply, satisfactory sewage disposal, adequate supervision of milk supply, planned medical and nursing service for mothers and infants, and safeguarding the community by recognized preventive measures, with special emphasis on school health and control of tuberculosis and venereal disease.

Announce Establishment of New Board of Anesthesiology.—The American Board of Anesthesiology has been organized as an affiliate of the American Board of Surgery in response to many requests to establish official recognition of physicians competent to practice and teach anesthesiology as a specialty. The affiliation was approved by the Advisory Board for Medical Specialties in February 1938. Cooperating societies include the Section on Surgery of the American Medical Association, American Society of Anesthetists, Inc., and the American Society of Regional Anesthesia, Inc. The term of membership on the new board will be six years. Present members are Drs. Thomas Drysdale Buchanan, New York, president; Henry S. Ruth, Philadelphia, vice president; Paul M. Wood, New York, secretary-treasurer; John S. Lundy, Rochester, Minn.; Emery A. Rovenstine, New York; Harry Boyd Stewart, Tulsa, Okla.; Ralph M. Tovell, Hartford, Conn.; Ralph M. Waters, Madison, and Philip D. Woodbridge, Boston. Two groups of candidates are recognized for qualification by the board: those who have already amply demonstrated their fitness as trained specialists in anesthesiology, the Founders' Group, and those who, having met the general and special requirements exacted by the board successfully pass its qualifying examination. The Founders' Group, on invitation by the board, may be chosen from (1) professors and associate professors of anesthesia in approved medical schools in the United States and Canada, (2) those who for fifteen years prior to the board's organization have limited their practice to anesthesiology, and (3) those who hold the certificate of fellowship in the American Society of Anesthetists, Inc. All applications for the Founders' Group must be received by Jan. 1, 1939. No candidate will be considered after that date. Requirements for those to be qualified by examination will be: 1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association or graduation from an approved foreign school. 2. Completion of an internship of not less than one year in a hospital approved by the Council or its equivalent in the opinion of the board. 3. Special training: A further period of graduate work of not less than three years devoted to anesthesiology taken in a recognized graduate school of medicine or in a hospital or under the sponsorship accredited by the American Board of Anesthesiology for the training of anesthetists. The period of training shall be of such character that the relation of the basic sciences to anesthesiology shall be emphasized. Adequate clinical experience in which the candidate has assumed the whole responsibility will be required. An additional period of not less than three years of study or practice limited to anesthesiology. 4. The candidate must present to the board sufficient evidence of good moral character and that he has limited his practice to anesthesiology as a specialty and that he intends to be so engaged.

The qualifying examination will be divided into two parts: Part I will consist of a written examination covering such topics as anatomy, biochemistry, physiology, pharmacology, physical diagnosis, therapeutics, pathology and public health, in relation to anesthesiology. Part II, oral and practical, may cover similar topics, and, in addition, such questions on physics and mechanics as are important in anesthesiology, especially dealing with electrical theories and the proper handling of high pressure gases and inflammable agents. The practical examination will consist of actual observation of clinical work in the applicant's own operating theater when possible, and it may consist of cadaver demonstrations of regional blocks, sites for alcohol injection, and procedures for resuscitation or inhalation therapy and clinical experimentation.

The fee for Group A, Founders' Group, shall be $25. The fee for Group B shall be $50, payable $25 on application, which shall be returned if the candidate is not accepted for examination, and $25 on taking the examination. Reexamination within two years may be had if necessary without additional fee. Once a candidate has become qualified he will have no further financial obligation to the board.

The board postponed its first examination (part I, written), which was scheduled for July 1938. Part I and part II will be held in New York City October 21. Requests for booklets of information and application blanks should be addressed to the secretary, Dr. Paul M. Wood, 745 Fifth Avenue, New York.

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Foreign Letters

LONDON

(From Our Regular Correspondent)

April 23, 1938.

A General Medical Service for the Nation

The present national health insurance applies only to employed persons and is compulsory for all whose income is below $1,250. It does not apply to the dependents of the employed or to workers of similar social standing who are not employed by any one. The council of the British Medical Association has brought forward a scheme for extending health insurance to the whole population. "There should," it says, "be provided for every individual the services of a general practitioner or family doctor." Though so worded it is probably not meant that every person should be compelled to join but only, as at present, those below a certain income level. The effect would be to double the number of the insured. The present system provides only a general practitioner service as a matter of course, though there are other medical benefits, which are contingent. As to how the scheme is to be financed, nothing is said. The present scheme is financed jointly by contributions from employers, the employed and the state. The council states that there exists a plethora of health services, better than those in any other country, but established in piecemeal more or less haphazard fashion, with consequent overlapping and unnecessary complication and also large gaps. Locally there are now two systems of medical provision, one under the insurance committees, the other under the local authorities, which are largely independent. The former provide a general practitioner service for 19,000,000 persons. The latter provide an environmental health service, a general practitioner service for the destitute, a school medical service, a maternity service based mainly on attendance by midwives, supervision of mental defectives, clinics for infant welfare, early mental disorders, venereal diseases and tuberculosis, consultants and specialists for certain purposes, and general and special hospitals. In addition certain voluntary bodies, such as those concerned with infant welfare and public health, render service.

The council considers that any general medical service for the nation should include, in addition to the environmental health and sanitary service, a general practitioner service, nursing, massage and physical medicine, dental and ophthalmic services, a maternity service, a consultant, specialist and laboratory service, and an institutional service. The council proposes that the existing insurance system shall be extended to the dependents of the present insured, those receiving domiciliary medical attendance through public assistance machinery, and others of similar economic status to the present insured though not under a "contract service." In association with the general practitioner service should be provided certain auxiliary services of lay persons, such as pharmacists, nurses, masseuses and biophysical assistants. Similarly there would be dental and ophthalmic benefits for all the insured and not, as now, "additional benefits" for some. Under the existing scheme all insured persons have a general practitioner service and a cash benefit in respect to maternity. Many, but not all, the insured have additional treatment benefits, depending on the funds of their societies. These are payments in respect to dental and ophthalmic treatment, convalescent home treatment, medical and surgical appliances and, to a much smaller extent, hospital accommodation. In the view of the medical profession, full dental and ophthalmic benefit should be provided as part of the insurance service. Specialist services in tuberculosis, in venereal and infectious diseases and in laboratory examinations are already provided by local authorities. It is proposed that the consultant and specialist service should be comprehensive in all branches and should be available only through the general practitioner.

The maternity service should include (1) antepartum care by or under the responsibility of a medical practitioner chosen by the patient, throughout pregnancy; (2) attendance by a certified midwife during the antepartum period, labor and the puerperal period; (3) attendance by the practitioner when necessary; (4) at least one postpartum consultation with the practitioner; (5) a second practitioner when necessary, as for administration of an anesthetic; (6) a consultant when necessary; (7) a laboratory service; (8) beds for persons requiring institutional treatment; (9) sterilized obstetric dressings; (10) ambulance facilities for patients requiring removal to institutions, and (11) women trained in domestic work, who would relieve the mother during the lying-in period.

The Spread of Streptococcic Infection as Ascertained by Type Determination

At the Society of Medical Officers of Health a discussion on infections was introduced by Dr. V. D. Allison of the Ministry of Health Pathological Laboratory. The main value of type determination in infections due to Streptococcus pyogenes was in (1) investigating the sources and paths of infection in explosive outbreaks of streptococcic infection, such as those due to milk, and outbreaks of puerperal fever in maternity hospitals, and (2) investigating the paths of infection in the wards of general and fever hospitals, and the effects of reinfection and cross infection in producing grave complications.

His investigations in scarlet fever wards had shown the following: 1. Patients nursed throughout their illness in cubicles or chambers show no change of the serologic type of the infecting streptococcus. Segregation of patients in small wards according to the serologic type of the infecting streptococcus showed that if a change of type did occur it was due to introduction of fresh infection by a member of the staff. 2. Infection with one serologic type of Str. pyogenes does not necessarily protect a patient against infection with another type. 3. The so-called relapse in scarlet fever is due to fresh infection with a streptococcus conveyed by another patient in the ward and differing in serologic type from that causing the primary infection. 4. In multiple bed wards for scarlet fever from 50 to 70 per cent of the patients become reinfected with one or more fresh types of Str. pyogenes during their stay in the hospital. 5. Such reinfection may be latent or manifest. 6. Complications in scarlet fever during the third week and subsequently in multiple bed wards are usually caused by reinfecting types of Str. pyogenes.

Dr. Allison gave experimental proofs of spread of infection by direct and indirect contact and pointed out the importance of infected toys, handkerchiefs and eating utensils as vehicles of infection. Air-borne infection by droplets was well recognized, but the part played by particles of dust, in which Str pyogenes could survive for a considerable time, was only beginning to be recognized. The problem of the spread of streptococcic infection was of equal importance in measles wards and in the wards of general hospitals.

Dr. R. Cruickshank referred to air-borne infection (not droplet or spray infection). Recent epidemiologic and bacteriologic work suggested that infection—and not only respiratory tract infection—was spread in spite of rigid precautions to prevent transference manually by fomites or by carriers. Droplets did not always fall immediately to the ground within a few feet of the individual. If not more than 0.1 mm. in diameter, evaporation rapidly reduced them to such a small size that they remained suspended in the air like particles of smoke. Larger droplets which had settled might also evaporate and be lifted into the air again as dust. Wells showed that certain organisms which commonly occurred in the upper respira-

tory tract—hemolytic streptococci, pneumococci and diphtheria bacilli—remained viable in the atmosphere for two days. Dr. Cruickshank found that in eight cases of burns in a ward infection with the same type of Str. pyogenes, which he cultivated from the dust, was present. In a small outbreak of puerperal sepsis he found Str. pyogenes in the atmosphere of the ward. In a diphtheria ward of young children streptococcic infections (tonsillitis, otitis media and vaginitis) occurred. Streptococci of the two infecting types were found on plates exposed in the ward and were more numerous where the infected patients were.

Fatal Case of Psittacosis at the Zoological Gardens

After an absence of psittacosis from this country for some years a case has occurred at the London Zoological Gardens. An attendant, aged 41, died from the disease, which he contracted in the course of his employment. At the inquest it was stated that he was supposed to be suffering from typhoid, but by injecting material from some of the organs into mice Prof. S. P. Bedson produced psittacosis in them. Mr. D. S. Smith, curator of birds and mammals at the Zoological Gardens, said that this was the first case in their more than one hundred years' history. It originated in a consignment of parrots brought from South America and the West Indies by Lord Moyne. As was customary, the birds were all kept in the sanatorium for a week or two. They had never been on exhibition to the public, and the whole consignment was destroyed as a precaution. The jury added to their verdict the statement that they were satisfied that every precaution had been taken by the authorities of the Zoological Gardens.

PARIS

(From Our Regular Correspondent)

April 23, 1938.

Complicated Tax System for French Physicians

Every physician and dentist in France is obliged to pay an income tax, a personal property tax and a third type of tax known as the "patente" or license to practice. A physician or dentist must keep a separate ledger in which the name of each patient and the amount paid for services are recorded daily. Instead of inscribing the name of the patient, a number may be given and the fee received placed opposite the number. The tax collector has the right, if there is any question as to the net annual income, after the usual deductions for professional expenses, to inspect the record of how much was received from each patient. Such a request for inspection of the daily receipts is rarely made, but the physician or dentist who does not keep such a ledger is liable to a heavy fine.

The "patente" or license tax is based on the rental value of the space occupied for professional purposes. If the office is in the physician's or dentist's apartment, used also as living quarters, the "patente" is calculated on the rental value of such rooms as are used in the practice of medicine or dentistry. Up to a few years ago, the "patente" was levied not only on the offices used by a physician or dentist in a city like Paris but also on the rental value of any suburban or country residence. Fortunately, this double, or triple in some cases, mode of collecting the "patente" has been abolished. However, recently the question was raised as to whether a physician who spends his vacation in some country town and receives fees for services rendered during his sojourn there is liable for the payment of an additional "patente." The minister of finance, in reply to such a question, raised in parliament on January 11, replied in the affirmative: The "patente" must be paid for such vacation receipts unless the services rendered are not reimbursed.

This "patente" or annual license to practice tax constitutes in many cases a heavy additional burden which is keenly felt in the present state of crisis here. Not only the medical and dental professions, but all "noncommercial pursuits," such as architects, engineers and accountants, must pay the "patente" tax.

Bacillus Funduliformis Infections

A number of articles have appeared in recent years in which cases of septicemia due to B. funduliformis were reported. This organism is strictly anaerobic and difficult to grow on mediums. At the March 29 meeting of the Académie de médecine of Paris, attention was called to the surgical aspects of B. funduliformis by Lemierre, Grégoire and their co-workers. The organism is constantly found in the normal digestive and urinary tracts and is apt to give rise to suppuration when perforation of the various components of these tracts occurs. The majority of reports of infection due to this organism are those of cases of tonsillitis and peritonsillar abscess and of otitis and mastoiditis. It is important for surgeons to be cognizant of the existence of bacteremias caused by B. funduliformis. In the clinical picture, the triad of symptoms (*a*) severe and prolonged chills followed by high temperatures, (*b*) pulmonary infarcts complicated by empyema and (*c*) arthritis, often suppurative, dominates.

To prevent spread of the infection from the most frequent primary foci in the pharynx and ear, attempts have been made to ligate the internal jugular vein, but this has not been successful in most cases.

An empyema which is a sequel of a generalized B. funduliformis infection should be operated on as soon as possible after the diagnosis of such a complication has been made. The B. funduliformis empyema shows a tendency to rupture into the bronchi and is often the only clinically demonstrable localization of the bacteremia. The metastatic osteo-articular foci also call for early intervention because of a similar tendency to perforate the joint capsule and invade the periarticular tissues. In one case, even though arthrotomy was performed on one shoulder and two elbow joints, the patient died. In another patient a suppurative arthritis had perforated the acetabulum and invaded the pelvic tissues. In spite of good drainage this patient died. In both of these cases, a large number of septic infarcts were found in the lungs at necropsy. Localization of the infection in the sacro-iliac joint is common. The termination in these cases of B. funduliformis bacteremia is not always fatal. The clinical course may be short without any localization calling for surgical intervention, or the latter may result in recovery, as in some cases in which an early diagnosis of such a localization has been made.

Lesions of Ulnar Nerve in Supracondyloid Fractures

At the March 16 meeting of the Académie de chirurgie of Paris, a paper was read by Prof. E. Sorrel and Dr. Sorrel-Déjerine in which twenty-one instances of injury to nerves following fracture of the lower end of the humerus were reported. In fifteen cases the ulnar nerve was involved; in one, the radial and in two, the median. Seven of the first named complicated a transverse supracondyloid fracture of the humerus. Such paralyses are relatively rare, according to the literature. The authors' seven cases occurred in a total of 207 transverse supracondyloid fractures, so that the incidence of paralysis of the ulnar nerve may be considered to be about 7 per cent.

Among these 207 cases, injury of the ulnar nerve was never observed in 184 of the type termed "extension fractures" by Kocher. In this type, the lower fragment is displaced behind the shaft, whereas in the "flexion" type the lower fragment is displaced in front of the shaft of the humerus. All seven cases of ulnar paralysis occurred in this second or flexion type

of fracture, so that the incidence is 30 per cent, the nerve being caught between the two fragments, the epiphysis and the shaft.

The symptoms of paralysis of the ulnar nerve are not very evident during the first few days after the injury. Often the paralysis is an incomplete one, the entire nerve not being involved. In only two of the seven cases reported by the authors was paralysis complete. It is important to make an early diagnosis of a nerve injury; hence the signs of such an involvement should be looked for in all supracondyloid fractures of the humerus in children. In three cases, injury to the nerve was recognized only following removal of the cast. Aside from the evidence of motor and sensory paralysis, vasomotor disturbances, such as marked dryness of the skin, are important objective signs. If the nerve injury is recognized early, the prospect of complete recovery is good. In one case, the nerve was found crushed between two fragments at the time of operation two days after the injury; nevertheless complete recovery was noted seven months later. In another child, the nerve was not found crushed but simply stretched over a fragment four months after the injury. Recovery following operation took place in much shorter time (three weeks) than in the preceding case.

If evidences of compression of the ulnar nerve are present but a good nonoperative reduction has been effected, it is safe to wait two weeks, but no longer, before operating, to see whether reduction of the fracture has succeeded in releasing compression of the nerve. If, however, the reduction is unsatisfactory, it is advisable to operate immediately.

Dedication of Monument in Memory of Professor Calmette

The city in which the late Professor Calmette was born has honored his memory by the erection of a monument, which was unveiled at Nice, April 8. The work depicts a nurse administering the BCG vaccine to an infant, which she holds in her arms. On the side of the monument is a plaque of the distinguished bacteriologist, who during the last years of his activity at the Pasteur Institute of Paris devoted his energies to the prevention of tuberculosis in the newborn by means of the BCG vaccine.

BERLIN

(From Our Regular Correspondent)

March 28, 1938.

The Survival of Prematurely Born Infants

"Prematurely born" is the term applied to infants whose weight at birth is less than 2,500 Gm. It has been deemed necessary to determine whether survivors of this group would grow up to be burdens on their families and on society. Professor de Rudder, ordinarius in pediatrics at Frankfort, undertook to solve this problem. Since evaluation also of mental development is of prime importance, children of school age were selected for investigation. That his material would be representative, the author limited his choice to children whose weights at birth had been from 1,000 to 1,700 Gm. This weight level approximates from one third to one half the neonatal weight of a baby born at term.

De Rudder established that the mortality among "tiny prematures," babies whose weight at birth is 1,700 Gm. or less, during the first months of life was extremely high despite the best of hospital care. Some 75 per cent of these babies die of general debility, injuries received during births, and so on. The author was able to make follow-up examinations of twenty-seven children from 6 to 17 years of age who had been "tiny prematures." Nearly all these children had spent their earliest infancy in the Frankfort Children's Hospital; consequently, precise data relative to that period were available. He found that the physical development of these children with respect to height and weight corresponded completely with the norm for their respective ages. This conformity has been noted by other investigators. In no instance was any defect such as a crippled condition of any sort or spasmophilia observed which could be referred to premature birth. Evaluation of mental development was based on various criteria: social environment, data supplied by relatives, impressions conveyed during medical examination, intelligence tests, and direct questioning of the teachers. Of the twenty-seven children only one was manifestly feebleminded and four attended special schools for backward children. The remaining twenty-two children attended regular school and were rated as average and in some instances as superior pupils. Rather deficient powers of concentration, inattention and slight mental fatigability were a few peculiarities repeatedly evidenced by these children. The prognosis for the children investigated is favorable and the question as to the survival value of "tiny prematures" can without reservation be answered in the affirmative.

AUSTRALIA

(From Our Regular Correspondent)

March 29, 1938.

Infant Mortality in South Australia

The statistical register of the state of South Australia for 1936-1937 shows that although the 589,000 inhabitants enjoy good health, judging by their death rate and longevity, and although in 1936 their infant mortality rate was equal to the lowest in the world, their birth rate is consistently the lowest of the Australian states and in 1936 was only 15 per thousand. South Australia has the lowest death rate in the commonwealth (a standardized rate of less than 8 per thousand), an expectation of life at birth of 65 years, and an infant mortality rate of 31 deaths per thousand live births. In 1915, 117,409 women of child bearing ages produced nearly 12,000 children; in 1935, 156,940 women gave birth to a little more than 8,000. The result is that at the census of 1933 there were 8,762 less children under 5 years of age than there were at the census taken twelve years earlier, and in the latest year the population has increased by less than 3,000. This is an odd position for a young country and a discouraging outlook. The low fertility, but not the low mortality, may be explained by the fact that rather more than half the population lives in and around Adelaide, that only a fourth are engaged in agriculture, that nearly a fourth of the wage-earning group were unemployed at the census of 1933, and that nearly 60 per cent of the male breadwinners had to live on an income of less than £2 per week. With such low figures for infant mortality it is interesting to consider how far this rate may eventually fall and whether there is some irreducible minimum below which it is not possible to go. In South Australia the rate has declined from 92 deaths per thousand live births in 1900-1904 to 31 in 1936. In the metropolitan area the latest rate is 35. It is the neonatal rate that is specially recalcitrant, but even at this stage of life improvement is clearly possible and is, in fact, taking place. In the latest years a third of the total mortality under one year of age was attributed to premature birth, 15 per cent to malformations, about 8 or 9 per cent each to congenital debility and injury at birth, 10 per cent to pneumonia, and only 3.5 per cent to diarrhea and enteritis. These figures show the direction that efforts for the saving of infant life must take and suggest that a considerable reduction of the world's record is still possible.

MATERNAL NUTRITION AND NEONATAL DEATHS

Dr. Jefferis Turner, director of infant welfare in Queensland, has drawn attention to the decrease in neonatal mortality following on adequate maternal nutrition. The infant mortality rates in Queensland and South Australia used to be equal. Since 1931, however, the rate in South Australia has been lower and was much lower in 1936, when it reached to within one

decimal point of the New Zealand rate, the lowest in the world. To explain this difference, a comparison was made of the mortality rates for the first month and for the next eleven months of the two states. Of the deaths during the first month, 86 per cent occurred during the first week. All were due to what have been classified as antenatal causes. In the years 1934-1936 the mortality rate in Queensland during the eleven months following the first month has been consistently lower than in South Australia. As infants are rarely brought to child welfare centers during the first week (in which about 86 per cent of this mortality occurs), the lower mortality rates during the first month in South Australia in comparison with Queensland cannot be due to the work of these centers. There is no reason to think that the management at birth is greatly superior in South Australia, so that neonatal or first month mortality can have been reduced only by improved health of the mothers. The facts point to better nutrition as the real cause. The last seven years have been years of economic depression and unemployment and it is the unemployed people who are most exposed to the dangers of malnutrition. In Queensland, the most important cause of malnutrition among women is the deficiency of milk in their diet. Much of this is due to want of knowledge but is aggravated by economic stringency. In South Australia during the "depression," the government adopted the policy of supplying milk rations to the families of the unemployed. Distribution of milk to children and mothers commenced in 1930. In 1935 the South Australian government, on the advice of a committee of the British Medical Association, added to the rations distributed one pint of milk daily to every child up to 6 years of age, half a pint to children between 6 and 13 years, and one and a half pints to expectant and nursing mothers. The milk ration is issued to every mother on production of a medical certificate of pregnancy and evidence that she is in economic need. In Dr. Turner's opinion, the addition of milk to other rations is an adequate explanation of the difference in neonatal mortality rates.

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A New Virus Disease

Investigations following the occurrence of a number of cases of fever among workers in a large meatworks in Brisbane have shown that there is in Queensland a fever entity of a type not previously differentiated. It has been provisionally named Q fever. It has certain resemblances to typhus, which in several forms is endemic in Queensland, but is distinguished from it by the absence of a characteristic rash and by the negative response to the Weil-Felix test. Dr. E. H. Derrick of Brisbane has reported these research studies. The onset is acute, the first complaints being malaise, anorexia, headache, pains in the back and limbs, and fever, rising rapidly and remaining usually between 102 and 104 F. Two types may be distinguished. In some cases there is a rapid subsidence after six to nine days; in others the course is protracted to the third or fourth week and the fall of temperature is gradual. The most striking symptom is severe and persistent headache. The pulse rate at the beginning of the illness in comparison with the height of the fever is slow. None of the cases so far have been fatal. Guinea pigs are susceptible to infection from blood or urine from human patients or from blood or organ emulsion from infected laboratory animals. Infected guinea pigs show an incubation period of from two to eighteen days, followed by a fever of from four to six days' duration. Occasionally the infection is inapparent but may be shown to have occurred by the fact that blood or tissues about two weeks after inoculation transmit the infection and that the animal is found afterward to be immune. The infecting agent of Q fever is present in the blood of human patients during the fever period and may be present in the urine in later stages. It is also present in the blood and liver of infected guinea pigs and minute amounts of these will transmit the infection to other guinea pigs. The virus contained in a liver emulsion may maintain its power to infect for several months if kept in the refrigerator at a temperature of about 5 C., the loss of potency being gradual. Despite considerable work, the epidemiology of Q fever remains obscure. There is no obvious relation to the season. Most of the cases occurred in meat workers or dairy farmers. Attempts to infect in ways other than by subcutaneous or intraperitoneal injection have not been successful, and it has been shown that ingestion of infected tissues could not be the method of natural spread of the fever. The abundance of the virus in the blood, and the ease with which the disease may be transmitted by injection, render it likely that some blood-sucking vector is responsible for the natural transmission and that there is a reservoir of infection in some animal. Attempts to find such a reservoir have so far failed.

EXPERIMENTAL STUDIES

On the hypothesis that a filtrable virus was responsible for the febrile reaction in guinea pigs, studies were made at the Walter and Eliza Hall Institute, Melbourne. No characteristic changes were found in the organs of the infected guinea pigs. Attempts to cultivate bacteria or Leptospira, and appropriate miscroscopic examinations for Leptospira were without result. The virus produces characteristic pathogenic effects on monkeys and mice and an inapparent infection in albino rats. The virus survives but does not produce characteristic lesions on the chorio-allantois of the developing egg. It is filtrable with difficulty through relatively permeable (0.7 micron) gradocol membranes. Mice inoculated intraperitoneally show enlargement of the spleen and liver with characteristic microscopic changes. Smears from the cut surface of the spleen, suitably stained, show the presence in variable numbers of intracellularly situated bodies which appear to be typical Rickettsiae. A satisfactory method of staining the organisms has not been obtained, but in smears stained by Castanedo's method the organisms take the form of tiny rods less than 1 micron in length and about 0.3 micron across; the shape varies from well marked rods to coccoid forms indistinguishable from those of psittacosis. Most of them appear blue but paler than psittacosis bodies, and in many clumps a large proportion of the Rickettsiae are pink. A proportion is usually found extracellular but the appearances suggest that all are initially intracellular, where they give rise to cytoplasmic microcolonies, sometimes relatively sharply defined, at other times with a fairly diffuse distribution of Rickettsiae through the cytoplasm. Except that the majority of the bodies are rod shaped, the general appearance of a smear is similar to that obtained from psittacosis-infected spleens. The accumulations range from about 3 to 12 microns in diameter and are usually sharply circumscribed with an oval or circular outline. The Rickettsiae were found in mouse spleen and liver in practically every instance when the tissues were infective and never in control mice treated in various ways. Typical Q fever Rickettsiae have been found in the spleens of mice inoculated with blood taken from a patient in the early stages of the disease, so that there is strong evidence to suggest that Q fever is Rickettsiae. Agglutination of semipurified Rickettsia suspensions from infected mouse tissues by immune human, monkey and guinea pig serums has been observed. Such suspensions are agglutinated to variable titer by serum taken from patients from ten to fifteen days after the onset of symptoms. The test is specific for Q fever infections and is a useful diagnostic method. No further information on the relation of the Q fever Rickettsiae to the classic forms is available. The absence of agglutination by a serum of known high content in X 19 agglutinins is a further indication that the condition bears no relation to typhus. There are some resemblances between the pathology of psittacosis infection in the mouse and that of Q fever, and Lillie in 1930 considered that the virus of psittacosis should be regarded as a Rickettsia. For these reasons limited cross immunity experiments were carried out. Mice immune

to Q fever were inoculated with an active strain of psittacosis and died with typical postmortem signs in the same time as control mice of the same age. It is considered that the Rickettsiae and the disease they cause are distinct from any previously described, but direct immunologic comparison with the various spotted fever (tick-borne) types will be necessary before this can be finally stated.

Possible Influx of European Practitioners into Australia

Toward the end of last year the question arose in Australia of the danger of an invasion on medical practice by foreign graduates. Recent legislation enacted in Tasmania requires any person applying for registration to be in the possession of a qualification obtained in a country which has reciprocity with Tasmania. It is also necessary that the whole of the course of study entitling the holder to his diploma should have been carried out in the country granting the qualification. The passing of legislation similar to this in states other than Tasmania would not remedy the matter, as a person who had, for example, done half his course of study in Melbourne and half in Sidney would not be eligible for registration in Tasmania. At the last meeting of the federal council of the British Medical Association it was resolved that a committee should be appointed to draft a clause which would be suitable for all states.

Trachoma in Western Queensland

Eye diseases have a high incidence among the children of Western Queensland and are a big factor in the conquest and control of the less fertile inland areas. Queensland, with its long western frontier against the inland desert country, where dust, dirt and flies combine to render the eyes susceptible, requires special provisions for the fight against trachoma. The state government, through the officers of the school medical service, seeks out affected children in western schools and homes, and, with the parent's consent, arranges for them to be brought to Brisbane, where they receive treatment for their eyes, together with school work specially suited to the individual capacity of each child, and additional training in domestic science for the girls and manual work for the boys. The results so far obtained have been encouraging. Almost every one of the 200 children who have passed through a special ophthalmic hostel since its foundation nine years ago have been cured of trachoma. After an average stay of eighteen months the children are sent back to their homes able to fulfil their normal life in the community. The expenditure of £30,000 on rebuilding the hostel is considered not large in view of the work it is doing. Provision for sixty-four children is none too great, for the director of school medical services and the ophthalmic surgeon in attendance, both of whom have wide knowledge of the actual conditions in the west, are of the opinion that trachoma is still very prevalent and that, if all the children who require treatment could have such advantages as those which they enjoy in the ophthalmic hostel in Brisbane, trachoma would soon cease to exist in the western districts of Queensland.

Hospital Treatment of Scarlet Fever

Contending that scarlet fever is only one of a number of streptococcic infections, Dr. F. V. Scholes of Melbourne asks why it is deemed necessary to notify, isolate and treat all cases of scarlet fever while the majority of all cases of infection by hemolytic streptococci can be ignored with regard to notification and isolation. Scarlet fever is merely the manifestation of certain symptoms in certain subjects. In others who are equally infectious the syndrome is absent, and they are therefore not suffering from scarlet fever in the strict sense of the term. Epidemics of sickness characterized by follicular tonsillitis, with or without otitis media, by nephritis and by cervical adenitis do not differ essentially from epidemics of scarlet fever. Tonsillitis in one member of a household is often followed by scarlet fever in another and possibly otitis or nephritis in a third. The same streptococcus has caused all of them and the symptoms of scarlet fever are merely a result in a particular individual. Dr. Scholes suggests that cases of acute tonsillitis and otitis should be investigated bacteriologically just as are cases of scarlet fever and diphtheria and that, if practicable, isolation and treatment should be carried out at home but that, if this cannot be done, the patients should be received in a hospital. All common types of scarlet fever have been found capable of causing scarlet fever, given the proper person. A population of scarlet fever patients, therefore, brought from different localities and aggregated in a fever hospital will be found on admission to be infected with differing strains or types of streptococci. To control direct transmission also Dr. Scholes urges individual isolation of patients until typed, either in cubicles or by barrier nursing in small wards; segregation of patients according to type, in wards of suitable size, according to the number of patients infected by each type (for this purpose subdivisible wards are advocated), and segregation according to type in separate convalescent wards when the walking convalescent stage is reached. By the adoption of these methods it is considered that the majority of young children with uncomplicated scarlet fever will make an uninterrupted recovery and that the state of those in whom infectivity is prolonged, now so often punctuated by a succession of complications and cross infections, will be a rare instead of a common feature.

Hydatid Disease in Australasia

Australia and New Zealand are the only English speaking countries in which hydatid disease is common. The large number of sheep, cattle and dogs give rise to a favorable milieu for the spread of hydatid disease. Two years ago the nucleus of a department for hydatid disease research and prevention was instituted at the New Zealand Medical School under the direction of Dr. C. E. Hercus, professor of public health, Dr. E. F. D'Ath, professor of pathology, and Sir Louis Barnett, emeritus professor of surgery. In New Zealand the human incidence of the disease has increased during the past ten years. At present a reasonable estimate is that from 100 to 150 cases out of a population of 1,500,000 occur every year, and the mortality rate is about 15 per cent. Argentina and Uruguay, important competitors with us in pastoral pursuits, are much more heavily infested. New Zealand has been carrying on a vigorous campaign for the prevention of hydatid disease. Posters and folders have been widely distributed among the farming community, schools, abattoirs and freezing works.

Marriages

LOUIS ZIMMERMAN, Elmsford, N. Y., to Miss Mildred E. Choper of Woodbridge, N. J., in New York, April 11.

HERBERT HAMMOND OGBURN, Greensboro, N. C., to Miss Bobbie Gene Truesdale of Mount Holly, February 12.

JOHN MACMILLAN TOWNSEND, Birmingham, Ala., to Miss Ann Kemper of Owenton, Ky., February 5.

KENNETH L. SHAFFER, Corydon, Ind., to Miss Annabelle Nafe of Kewanna, in Lafayette, February 20.

CHARLES W. NEUHARDT, Yonkers, N. Y., to Miss Ruth T. Vogel of New Hartford, Conn., in January.

LEONARD JAY TRILLING, Paterson, N. J., to Miss Beatrice Sulzberger of New York, April 14.

ROBERT NOVAK, Brookville, Ohio, to Miss Wilda Corts of Coffeyville, Kan., in February.

CLETUS T. KEARNEY, Gridley, Ill., to Miss Helen Garm of Beardstown, February 26.

G. ROBERT MATTHEWS JR. to Miss Virginia R. Elliott, both of York, Pa., April 26.

GEORGE A. ZINDLER to Miss Florence Mary Rudell, both of Detroit, April 23.

Deaths

Paul J. Pontius ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1891; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; ophthalmologist to St. Joseph's Hospital, Philadelphia, Masonic Home, Elizabethtown; consulting surgeon to the Wills Hospital; consulting ophthalmologist to the Philadelphia General and Frankford hospitals, Shriners' Hospital for Crippled Children, Philadelphia, and Grand View Hospital, Sellersville; in 1932 received the honorary degree of doctor of science from Bucknell College, Lewisburg, Pa.; aged 70; died, February 16, of carcinoma of the bladder.

Wade Hampton Frost ✠ Baltimore; University of Virginia Department of Medicine, Charlottesville, 1903; dean of Johns Hopkins School of Hygiene and Public Health, 1931-1934, resident lecturer in epidemiology, 1919-1921, and since 1921 professor; associated with the U. S. Public Health Service from 1905 to 1929; director of the bureau of sanitary service of the American Red Cross during the World War; author of monographs in the field of sanitary science and epidemiology; aged 58; died, May 1, in the Johns Hopkins Hospital, of carcinoma of the esophagus.

Thomas William Harvey ✠ Orange, N. J.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1878; past president of the Medical Society of New Jersey and the Essex County Medical Society; fellow of the American College of Surgeons; formerly member of the board of education; city physician, and secretary of the board of health, 1880-1884; consulting surgeon to the Orange Memorial Hospital and the New Jersey Orthopedic Hospital; aged 84; died, April 8, of arteriosclerosis.

Mildred Clark Clough ✠ Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1914; instructor in clinical medicine at her alma mater, 1916-1921; teacher of physiology, Maryland State Teachers College, 1919-1922; physician in charge, venereal disease clinic (for women), city health department, 1926-1932; co-author of the ninth edition of "Practical Bacteriology, Hematology and Animal Parasitology"; aged 49; died, March 11, of bronchopneumonia following osteomyelitis and pyelitis.

William F. Elgin ✠ Glen Olden, Pa.; University of Maryland School of Medicine, Baltimore, 1887; director of the H. K. Mulford Vaccine Laboratory of Philadelphia from 1898 to 1929, when the company was acquired by Sharp & Dohme and he became director of the vaccine division; retired March 15, 1938; member of the Medical and Chirurgical Faculty of Maryland; author of numerous articles on the production of vaccines; aged 76; died, April 18, of bronchopneumonia and cerebral hemorrhage.

Stephen Webb Davis ✠ Charlotte, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1927; formerly secretary of the Mecklenburg County Medical Society; served during the World War; fellow of the American College of Physicians; secretary and member of the staff of the Presbyterian Hospital; on the staffs of the Mercy Hospital and the New Charlotte Sanatorium; aged 43; died, March 16, of a self-inflicted bullet wound.

Sanford Withers ✠ Denver; Washington University School of Medicine, St. Louis, 1919; member of the Radiological Society of North America, American College of Radiology and the American Radium Society; fellow of the American College of Physicians; served during the World War; on the staff of the Denver General Hospital; aged 46; died, March 8, in New York, of aplastic anemia and bronchopneumonia.

Ross Vernet Patterson ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1904; dean and Sutherland M. Prevost professor of therapeutics at his alma mater; past president of the Medical Society of the State of Pennsylvania and the Association of American Medical Colleges; served during the World War; received honorary degrees from several colleges; aged 60; died, May 2, in the Jefferson Hospital.

Eugene E. Tupper, Eau Claire, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; member of the State Medical Society of Wisconsin; past president and secretary of the Eau Claire Dunn-Pepin Counties Medical Society; on the staff of the Luther Hospital; aged 67; died, February 24, of pulmonary tuberculosis and lobar pneumonia.

Paul Eaton ✠ Jacksonville, Fla.; Western Pennsylvania Medical College, Pittsburgh, 1903; formerly associate professor of preventive medicine at the University of Georgia School of Medicine, Augusta; director of the diagnostic laboratories, state board of health; aged 62; died, February 25, in the Riverside Hospital, of heart disease, paralysis agitans and bronchopneumonia.

Elmer Ellsworth Brinckerhoff ✠ Oakland, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; member of the Pacific Coast Oto-Ophthalmological Society; at various times on the staffs of the Alameda County, Providence and Peralta hospitals; aged 55; died, March 12, of chronic nephritis and pulmonary tuberculosis.

Guy Stark Saffold, Washington, D. C.; George Washington University School of Medicine, Washington, 1905; member of the Medical Society of the District of Columbia; served during the World War; formerly on the staff of the Episcopal Eye, Ear and Throat Hospital; aged 57; died, February 27, of carcinoma of the larynx.

Thomas Smith O'Connell ✠ East Hartford, Conn.; College of Physicians and Surgeons, Baltimore, 1892; for many years member of the board of education and formerly member of the state legislature; aged 71; died, February 25, in St. Francis Hospital, Hartford, of chronic osteomyelitis of the vertebrae with abscess formation.

Charles Dalton Cleghorn, Miami, Fla.; Columbia University College of Physicians and Surgeons, New York, 1904; member of the Florida Medical Association and the Radiological Society of North America; superintendent of the Macon (Ga.) Hospital, 1916-1918; aged 59; died, March 25, of pulmonary tuberculosis.

Leslie Boyd Seaport, Cohoes, N. Y.; Albany Medical College, 1916; member of the Medical Society of the State of New York; served during the World War; aged 47; on the staff of the Cohoes Hospital, where he died, February 20, of acute perforated gangrenous appendicitis and peritonitis.

Loren Ray Weir, New Britain, Conn.; Kansas City (Mo.) Hahnemann Medical College, 1915; member of the Connecticut State Medical Society; served during the World War; on the staff of the New Britain General Hospital; aged 53; died suddenly, February 10, of acute coronary occlusion.

Frank Holmes Smith ✠ San Bruno, Calif.; Cooper Medical College, San Francisco, 1905; past president of the San Mateo County Medical Society; aged 58; on the staff of the Mills Memorial Hospital, San Mateo, where he died in February of gunshot wounds inflicted by a patient.

Joseph H. Cooper, Tuscaloosa, Ala.; Chattanooga (Tenn.) Medical College, 1904; veteran of the Spanish-American War; aged 64; died, March 16, in the Veterans Administration Facility, Atlanta, of surgical shock following the second stage operation for suprapubic prostatectomy.

Daniel Joseph Devlin Jr., ✠ Assistant Surgeon, U. S. Public Health Service, Reserve, New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1933; on the staff of the U. S. Marine Hospital; aged 28; died suddenly, March 14, of heart disease.

John William McLean, Godwin, N. C.; Davidson (N. C.) School of Medicine, 1902; member of the Medical Society of the State of North Carolina; member of the county board of health; aged 63; died suddenly, February 28, in Ventnor, N. J., of arteriosclerotic myocarditis.

Frank Montague Shipman, Denver; St. Louis College of Physicians and Surgeons, 1908; health officer of Aurora and member of the school board; on the staffs of the Porter Sanitarium and Hospital and Mercy Hospital; aged 55; died, February 21, of lobar pneumonia.

Lot E. Alexander, Pendleton, Ind.; University of Pennsylvania Department of Medicine, Philadelphia, 1874; member of the Indiana State Medical Association; formerly member and secretary of the board of education; aged 84; died, February 8, at Milroy, Pa., of senility.

Lilian Welsh, Columbia, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1889; professor emeritus of physiology and hygiene at Goucher College, Baltimore; in 1924 received the honorary degree of LL.D. from Goucher College; aged 79; died February 23.

George S. Ray, Erie, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; member of the Medical Society of the State of Pennsylvania; on the staff of St. Vincent's Hospital; aged 67; died, February 20, of heart disease and hypertension.

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George Patrick Quinn, Shreveport, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1928; member of the Louisiana State Medical Society; formerly director of health in the public schools; aged 35; was drowned, February 1, in the Mississippi River.

James H. Bennett, Youngstown, Ohio; Western Reserve University Medical Department, Cleveland, 1887; for many years member and president of the board of education; aged 78; died, March 2, of arteriosclerosis, cerebral hemorrhage and hypertrophy of the prostate.

Vera Heinly Jones ✠ Denver; University of Colorado School of Medicine, Denver, 1925; director of maternal and child health and care of crippled children under the state board of health and the social security administration; aged 40; was drowned, February 16.

John Franklin Williams, Monticello, Fla.; Atlanta Medical College, 1897; member of the Florida Medical Association; on the associate staff of the John D. Archbold Memorial Hospital, Thomasville, Ga.; aged 71; died, February 6, in St. Vincent's Hospital, Jacksonville.

George Edward Leete, Concord, N. H.; Dartmouth Medical School, Hanover, 1877; member of the New Hampshire Medical Society; at one time member of the school board and board of health of Canaan; aged 86; died, February 22, of cerebral hemorrhage.

Ernest Don Smith, Fort Wayne, Ind.; Fort Wayne College of Medicine, 1896; member of the Indiana State Medical Association; on the staffs of the Methodist and Lutheran hospitals; aged 63; died, February 26, in St. John's Hospital, Springfield, Ill., of hypertension.

Jasper William Jolley, Marion, Ohio; Starling Medical College, Columbus, 1905; member of the Ohio State Medical Association; served during the World War; aged 57; died, February 13, at Rochester, Minn., of hemorrhage following an intestinal operation.

Charles Neumann Gelber ✠ New York; Long Island College Hospital, Brooklyn, 1913; member of the American Academy of Ophthalmology and Oto-Laryngology; formerly medical director of the Gelber Hospital; aged 46; died, March 3, of coronary sclerosis.

William H. Cox, Brooksville, Fla.; Chattanooga (Tenn.) Medical College, 1893; formerly state health officer and secretary of the state board of health; state prison physician from June 1928 to June 1932; aged 75; died, March 4, of nephritis and uremia.

Robert E. Crabtree, Amsterdam, Mo.; University Medical College of Kansas City, 1900; member of the Missouri State Medical Association; served during the World War; aged 67; died, March 14, in the Research Hospital, Kansas City, of encephalitis.

Leon Oscar Davis ✠ Philadelphia; Medico-Chirurgical College of Philadelphia, 1914; instructor in surgery, Temple University School of Medicine; on the staff of the Temple University Hospital; aged 48; died, February 27, of coronary thrombosis.

William Woodword Easterling, Lake Village, Ark.; University of the City of New York Medical Department, 1889; member of the Arkansas Medical Society; county health officer; aged 68; died, February 21, of heart disease and hypostatic pneumonia.

John P. Sudderth, Nowata, Okla.; Southern Medical College, Atlanta, 1891; member of the Oklahoma State Medical Association; formerly county health officer; on the staff of the Nowata Hospital; aged 69; died, February 15, of cirrhosis of the liver.

Robert Staunton Adams ✠ Wexford, Pa.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1891; member of the Medical Society of the State of New York; aged 71; died, February 28, of a cerebral hemorrhage.

Ernest G. Dittmer, Manchester, Iowa; Chicago Homeopathic Medical College, 1895; member of the Iowa State Medical Society; mayor; past president of the Delaware County Medical Society; aged 68; died, March 14, of cerebral hemorrhage.

Perry Franklin Bullington, Chico, Calif.; Eclectic Medical Institute, Cincinnati, 1892; Cooper Medical College, San Francisco, 1908; formerly health officer and president of the board of education; aged 71; died, March 5, in San Francisco, of uremia.

Grover Barney Woodard ✠ Wilson, N. C.; Medical College of Virginia, Richmond, 1915; past president of the Wilson County Medical Society; on the staff of the Mercy Hospital; aged 47; died, February 26, in the Memorial Hospital, Richmond, Va.

Harry Hyman Blond, Los Angeles; McGill University Faculty of Medicine, Montreal, Que., Canada, 1931; member of the California Medical Association; on the staff of Cedars of Lebanon Hospital; aged 31; died, March 12, of heart disease.

Thomas G. Parker, Racine, Wis.; Illinois Medical College, Chicago, 1907; served during the World War; on the staff of St. Luke's Hospital; aged 65; died, February 22, of cerebral hemorrhage with bulbar paralysis and fracture of the left femur.

Charles L. Maine, Du Bois, Pa.; College of Physicians and Surgeons, Baltimore, 1892; member of the Medical Society of the State of Pennsylvania; on the staff of the Maple Avenue Hospital; aged 72; died, February 11, of coronary sclerosis.

William Alex Quinn, Lakeland, Ky.; Louisville (Ky.) Medical College, 1883; at one time member of the state and county boards of health; formerly superintendent of the Central State Hospital; aged 77; died, February 27, of pneumonia.

Ira McConnaughey Roadman, Minneapolis; University of Minnesota Medical School, Minneapolis, 1898; served during the World War; aged 72; died, February 14, at Mexico City, of peritonitis following an operation for acute appendicitis.

David B. Beggs, Wilkinsburg, Pa.; Jefferson Medical College of Philadelphia, 1899; member of the Medical Society of the State of Pennsylvania; formerly public school physician; aged 70; died, February 25, of cerebral hemorrhage.

Wunibald John Probst, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1908; served during the World War; aged 52; on the staff of the Mercy Hospital, where he died, February 8, of arteriosclerotic heart disease.

George Marion Bumgarner, Richmond, Calif.; Beaumont Hospital Medical College, St. Louis, 1892; served during the World War; aged 66; died, March 15, in a hospital at Palo Alto, of arteriosclerosis and cerebral hemorrhage.

Ernest Antonio Lopez, San Leandro, Calif.; Indiana University School of Medicine, Indianapolis, 1924; member of the California Medical Association; aged 40; died, February 1, in the Peralta Hospital, Oakland, of brain tumor.

Francis Errett Roberts, Moundsville, W. Va.; Johns Hopkins University School of Medicine, Baltimore, 1916; member of the American Urological Association; aged 47; died, February 6, of pulmonary and intestinal tuberculosis.

Leslie Brand, Maysville, Ky.; Baltimore Medical College, 1901; formerly member of the board of education; aged 65; died, March 22, in the Harrison Memorial Hospital, Cynthiana, of injuries received in an automobile accident.

Thomas Benton Crisp ✠ Washington, D. C.; George Washington University School of Medicine, Washington, 1919; aged 45; died, March 20, in the Walter Reed General Hospital, of cerebral hemorrhage and arterial hypertension.

Joseph David Hall, Readyville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1883; member of the Tennessee State Medical Association; aged 83; died, February 27, of carcinomatosis and intestinal obstruction.

Benaiah R. Job, Cottage Grove, Ore.; University of Oregon Medical School, Portland, 1897; member of the Oregon State Medical Society; formerly mayor, and city health officer; aged 78; died, February 16, of chronic nephritis.

Francis Anthony Auleta, New York; University and Bellevue Hospital Medical College, New York, 1901; served during the World War; aged 58; died, March 10, in the Roosevelt Hospital, of subacute bacterial endocarditis.

Robert Cade Parrish ✠ Philadelphia; Medico-Chirurgical College of Philadelphia, 1898; district medical supervisor of the city public schools; served during the World War; aged 61; died, February 1, of cardiovascular disease.

William K. Dolan, Scranton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1880; member of the Medical Society of the State of Pennsylvania; aged 83; died, February 28, of carcinoma of the prostate.

Robert Lee Seward, Isle of Wight, Va.; University of Maryland School of Medicine, Baltimore, 1891; member of the Medical Society of Virginia; for many years member of the school board; aged 75; died, January 31.

Emanuel Goodman, San Francisco; Medical College of Ohio, Cincinnati, 1892; member of the California Medical Association; aged 82; died, February 22, in the Mount Zion Hospital of arteriosclerosis and bronchopneumonia.

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Gaetano Gerardo Petrocelli, Waterbury, Conn.; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1905; aged 60; died, March 23, of cerebral hemorrhage, coronary disease and arterial hypertension.

Benjamin Leslie Harrison, Trumann, Ark.; Barnes Medical College, St. Louis, 1899; member of the Arkansas Medical Society; aged 70; died, February 19, in St. Bernard's Hospital, Jonesboro, of bronchopneumonia.

Louis Altman ✠ New York; St. Louis University School of Medicine, 1927; aged 36; on the staffs of the Jewish Maternity Hospital and Beth Israel Hospital, where he died, March 22, of a staphylococcic infection.

William Alonzo Ostrander, Smethport, Pa.; Jefferson Medical College of Philadelphia, 1899; served during the World War; aged 65; died, February 12, in the Community Hospital, Kane, of cerebral hemorrhage.

Henry Augustus Elliot, Barnet, Vt.; University of Vermont College of Medicine, Burlington, 1893; formerly member of the state legislature; aged 70; died, March 31, in the Brightlook Hospital, St. Johnsbury.

Semmie Moberly, Little Rock, Ark.; Eclectic Medical University, Kansas City, Mo., 1918; served during the World War; aged 42; died, February 25, in the Veterans Administration Facility of lobar pneumonia.

Alfred Edwin McRitchie, Qu'Appelle, Sask., Canada; Western University Faculty of Medicine, London, Ont., 1911; aged 48; died, January 6, in the Union Hospital, Indian Head, of staphylococcic septicemia.

Gipson Benjamin Mack ✠ Auburn, N. Y.; New York Homeopathic Medical College and Hospital, 1904; on the staffs of the City Hospital and the Mercy Hospital; aged 72; died, February 27, of encephalitis.

Jeffery Charles Douville ✠ North East, Pa.; University of Maryland School of Medicine, Baltimore, 1893; aged 72; died, February 2, in St. Vincent's Hospital, Erie, of bronchopneumonia and arteriosclerosis.

Charles Perry Horner, Enid, Okla.; Northwestern University Medical School, Chicago, 1899; member of the Illinois State Medical Society; aged 64; died, February 6, in a local hospital of cerebral hemorrhage.

Charles H. Barnstein, Newton, Wis.; Milwaukee Medical College, 1906; member of the State Medical Society of Wisconsin; aged 57; died, March 4, of hypostatic pneumonia and coronary thrombosis.

Adin Henry Foster, Erie, Ill.; Keokuk (Iowa) Medical College, 1905; member of the Illinois State Medical Society; aged 72; died, March 3, in the Mercy Hospital, Davenport, Iowa, of myocarditis.

John James Gill, Chatham, La.; Memphis (Tenn.) Hospital Medical College, 1891; member of the Louisiana State Medical Society; aged 71; died, February 23, in the Ruston-Lincoln Sanitarium, Ruston.

Louis D. Barbot, Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1892; aged 70; died, March 24, in St. Francis Xavier Infirmary of paralytic ileus and coronary sclerosis.

Nathaniel Selleck ✠ Danbury, Conn.; University of the City of New York Medical Department, 1891; on the staff of the Danbury Hospital; aged 69; died, March 13, of carcinoma of the stomach.

William Marvin O'Cain, Jasper, Fla.; Atlanta College of Physicians and Surgeons, 1900; aged 65; died, February 5, in River Junction of hypostatic pneumonia, furunculosis and an infected arm.

George Franklin Roberts, Lexington, S. C.; University of Tennessee Medical Department, Nashville, 1908; member of the South Carolina Medical Association; aged 55; died, January 22, in Columbia.

Charles Morris Quimby ✠ Gloucester, Mass.; Maryland Medical College, Baltimore, 1904; on the staff of the Addison Gilbert Hospital; aged 68; died, February 25, of coronary occlusion.

Millard Henry Crawford, Charlottesville, Va.; University of the City of New York Medical Department, 1874; at one time served in the navy; aged 85; died March 20, of cardiac embolus.

Julian E. Tilman, Powhatan, Va.; Medical College of Virginia, Richmond, 1900; formerly county coroner and chairman of the board of health; aged 61; died, February 25, of heart disease.

G. W. Sherrer, Rayle, Ga.; University of Georgia Medical Department, Augusta, 1876; member of the Medical Association of Georgia; Confederate veteran; aged 90; died, February 26.

Earle C. Glenn, Sandy Lake, Pa.; Baltimore Medical College, 1903; aged 62; died, February 24, in the Mercer County Home and Hospital, Mercer, of heart disease and tuberculosis.

John McElhenny Grubbs, Seward, Pa.; Miami Medical University, Columbus, 1886; aged 80; died, February 10, in the Lee Homeopathic Hospital, Johnstown, of cerebral hemorrhage.

Frederic Thomas Masengill, Jonesboro, Tenn.; Hospital College of Medicine, Louisville, Ky., 1898; served during the World War; aged 63; died, February 28, of myocarditis.

Otto Fred Heidrich, Pasadena, Calif.; University of Minnesota Medical School, Minneapolis, 1936; aged 28; died, February 16, of carcinomatosis and teratoma of the testicle.

Richard F. Duncan, Tompkinsville, Ky.; University of Louisville (Ky.) Medical Department, 1886; served during the World War; aged 74; died, March 25, of spinal sclerosis.

Joseph Harry Honnet, Wilmington, N. C.; Columbia University College of Physicians and Surgeons, New York, 1900; aged 63; died, February 28, of coronary thrombosis.

Every Paul Lunderville ✠ Berlin, N. H.; University of Vermont College of Medicine, Burlington, 1896; also a pharmacist; aged 63; died, February 4, of acute nephritis.

Frederick Lewis Baker, Philadelphia; Medico-Chirurgical College of Philadelphia, 1895; served during the World War; aged 72; died, February 27, of arteriosclerosis.

John W. Greenman, Galesburg, Ill.; Keokuk (Iowa) Medical College, 1898; aged 63; died, February 22, in Clermont, Fla., of uremia, nephritis and cerebral hemorrhage.

Harry de Nell Williams, San Francisco; College of Physicians and Surgeons of San Francisco, 1906; aged 58; died, February 18, of a self-inflicted bullet wound.

Homer S. Bruce ✠ Opelika, Ala.; Atlanta Medical College, 1891; formerly on the staff of the East Alabama Hospital; aged 64; died, March 12, of coronary thrombosis.

James Max Keaton, Asheville, N. C.; Howard University College of Medicine, Washington, D. C., 1917; aged 59; died, February 22, of acute dilatation of the heart.

William Lowry Arnold, Church Hill, Tenn.; University of Tennessee Medical Department, Nashville, 1901; aged 63; died, March 11, of cerebral hemorrhage.

Donald Eugene Harris, Los Angeles; Medical College of Ohio, Cincinnati, 1902; aged 60; died, February 18, of traumatic fracture of the sixth cervical vertebra.

Clarence Frederick Bass, Chattanooga, Tenn.; Meharry Medical College, Nashville, 1916; aged 52; died, March 3, of cardiac insufficiency and thrombosis.

John A. Ferguson, Memphis, Tenn.; University of Louisville (Ky.) Medical Department, 1895; aged 75; died, March 14, in the Western State Hospital.

Frank Benjamin Cogswell ✠ Washington, D. C.; Hering Medical College, Chicago, 1908; aged 53; died, March 28, of cerebral hemorrhage and uremia.

Frank Taylor, Hazleton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1901; aged 65; died, February 21, of chronic myocarditis.

Walter P. Deakins, Wildwood, Ga.; University of Tennessee Medical Department, Nashville, Tenn., 1892; aged 71; died, February 28, of influenza.

Alva Burton Burris, Salisbury, Md.; Hahnemann Medical College and Hospital of Philadelphia, 1909; aged 65; died, March 25, in a local hospital.

Robert E. Darby, Springfield, Mo.; University Medical College of Kansas City, Mo., 1893; also a dentist; aged 73; died, March 9, of lobar pneumonia.

Jeptha Dickey Davis, Fort Thomas, Ky.; Medical College of Ohio, Cincinnati, 1890; aged 72; died, March 25, in Coral Gables, Fla., of heart disease.

Edward Wray Crockett, Macclenny, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1916; aged 47; was shot and killed, February 24.

Platt Welch Upshaw, Galena, Kan.; American Medical College, St. Louis, 1892; aged 66; died, February 24, in St. John's Hospital, Joplin, Mo.

William Henry Gunther, Sheboygan, Wis.; Rush Medical College, Chicago, 1883; aged 78; died, March 27, of arteriosclerosis.

Correspondence

THE MODE OF ACTION OF SULFANILAMIDE

To the Editor:—In a communication in The Journal, April 9, Elizabeth S. Hemmens and G. M. Dack called attention to an ambiguity in our article on the mode of action of sulfanilamide in The Journal, January 29, page 349.

We state in the summary: "The major action of sulfanilamide on the beta hemolytic streptococcus seems to be neutralization of the toxins." We used the word "neutralization" in its general sense of "to render inert the peculiar properties of" rather than in the chemical sense of "chemically combine with and destroy." We used the plural "toxins" to indicate that we were not referring solely to hemotoxin. It is evident from this communication and from letters which we have received that the word "neutralization" was poorly chosen and that we should have said: "The major action of sulfanilamide appears to be on the production of toxins or aggressins. We do not yet know to what this is due." We did consider in November 1937, when the article was submitted for publication, that a loose chemical combination with preformed toxin was most probable. We have since been unable to demonstrate by the usual methods any inactivation of preformed hemotoxin. However, it must be remembered that the usual test is based on visible hemolysis produced within one hour and that such concentrations of hemotoxin do not ordinarily accumulate in the body in beta hemolytic streptococcus infections before death. The marrow culture should therefore be more suitable than the ordinary toxin titration for detecting quantities of toxin comparable to what might be produced in human infections.

The degree of bacteriostasis produced by sulfanilamide in broth cultures could hardly produce more than delayed death if it were the only factor operative in therapy with the drug. We are still of the opinion that the major action of sulfanilamide is on the toxins or aggressins which are responsible for the virulence of the organism and which render it relatively immune to bactericidal substances against the beta hemolytic streptococcus present in normal human serum and in monkey serum but not present in the serum of the mouse. We have now more evidence to support the view that bactericidal substances must be present in the serum of the animal, be developed or be introduced from another source if sulfanilamide is to save lives. For example, sulfanilamide alone has only a slight bacteriostatic effect on pneumococcic infections in marrow cultures or broth cultures but sulfanilamide plus type specific antipneumococcus serum is far more effective than either alone. We also have data on a sufficient number of clinical beta hemolytic streptococcus infections treated with only 0.3 to 0.6 Gm. of sulfanilamide every four hours night and day to support our evidence from marrow culture that the previously used large doses are not necessary in beta hemolytic streptococcus infections.

Our observations that the presence of bactericidins in the serum is more necessary than phagocytosis by the cells and that the previously used doses of sulfanilamide are higher than necessary with small inoculations of organisms, such as are found in human infection, have already been confirmed by Hoare (*Lancet* **1**:655 [March 19] 1938).

Experiments are cited by Hemmens and Dack with Bacterium necrophorum as evidence that the action of sulfanilamide is not on the toxins or aggressins. It is difficult to see why the fact that toxin production by Bacterium necrophorum has not yet been demonstrated proves that toxin production by this organism does not occur when it is recalled how many years the gonococcus and meningococcus were studied before toxin production by these organisms was demonstrated and effective antitoxins were prepared. It is difficult to see how "inhibitory action of the drug on the reproductive rate of the organism" of the degree demonstrated by Long and Bliss and others in ordinary culture mediums could explain the enormous differences in bactericidal power observed by Colebrook, Buttle and O'Meara between sulfanilamide in monkey or human blood and equal concentrations of sulfanilamide in mouse blood, or could explain the differences between our observations in marrow culture or mediums containing human serum and in Hartley broth.

We regret that a poor choice of terms failed to make our meaning clear and appreciate having had this ambiguity called to our attention.

Edwin E. Osgood, M.D.
Inez E. Brownlee, B.A., Portland, Ore.

CYCLOPROPANE AND POSTOPERATIVE ATELECTASIS

To the Editor:—It has come to be accepted in recent years that bronchial obstruction is necessary in the causation of postoperative atelectasis. Jones and Burford (The Journal, April 2, p. 1092) postulate that massive atelectasis can occur in the absence of bronchial obstruction. This view is based on their observations on cyclopropane anesthesia. They maintain that, because the cyclopropane and oxygen are readily absorbed and slowly absorbable nitrogen is in time dissipated, there is a gradual disappearance of gases from the alveoli which could keep them distended. Contributing factors are mentioned, such as quiet, shallow respirations, opiates, the pharmacologic effect of cyclopropane itself and also the high oxygen content in the lungs.

The view which the authors have taken would seem to be at odds with our concepts of the physiology of respiration. One of the fundamental principles involved in this problem is the difference between the intrapleural and the atmospheric pressures. The latter is known to be 6 mm. of mercury higher than the former (for adults). The atmosphere is directly continuous with the bronchi and alveoli, provided the air passages are patent. On inspiration the intrapulmonary pressure is approximately 9 mm. greater than the intrapleural pressure. It is obvious from these facts that atelectasis should not occur no matter how absorbable the gases may be, provided the normal gradient between intrapleural and intrapulmonary pressures is maintained.

That this differential pressure may be maintained during anesthesia is not to be doubted, for atmospheric pressure is exerted on the exterior of the anesthesia bag and, in addition, since the mask is not sealed to the face some air must from time to time be sucked into the air passages. Any quiet shallow breathing that occurs during anesthesia will have little influence in collapsing the lungs, so long as the differential pressure is maintained. The lungs are known to remain distended even after breathing has ceased.

The authors describe a case of their own and three others which came to autopsy. Of one of the latter it is definitely stated that no bronchial obstruction was observed, although this is assumed to have occurred in the others. It is difficult to reconcile the presence of atelectasis in these cases with the absence of bronchial obstruction. It may be suggested that some functional condition such as bronchial spasm or a falling back of the tongue is responsible for the closure of the air passages. Another possibility is the inhalation from an empty bag; I have frequently seen anesthetists practice this procedure toward the end of anesthesia.

There have been no experiments to prove that quickly absorbable gases per se lead to atelectasis; there is on the contrary evidence that this does not occur. Numerous experiments have

been performed in which animals have survived atmospheres of pure oxygen for days (Smith, S.: *J. Physiol.* **24**:19, 1899).

The recommendation of the authors that an inert gas such as helium be added to cyclopropane is excellent because it will at least delay atelectasis when bronchial obstruction is present.

JULIUS KAUNITZ, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ACTION OF DRUGS ON SYMPATHETIC NERVOUS SYSTEM

To the Editor:—An article by Boyd and Connell (*Am. J. M. Sc.* **194**: 768 [Dec.] 1937) describing the action of benzedrine and related substances prompts me to ask a number of questions, some clinical, some pharmacologic. In spinal anesthesia, ephedrine salts are used to combat the falling blood pressure, but it is said that too large a dose of ephedrine may be harmful. This seems to be borne out by the experiments mentioned by Boyd and Connell. They state that previous cocainization enhanced the effect of epinephrine on the blood pressure of rabbits but actually decreased the response to ephedrine and benzedrine compounds. In a number of instances a fall in blood pressure occurred when ephedrine or benedrine compounds were injected after cocaine. Since I am interested in the treatment of cocaine poisoning, I raise the following questions: In shock even the injection of epinephrine is deprecated, since it tends to trap blood on the arterial side of the circulation and prevent an adequate return to the heart. In cocaine poisoning would epinephrine be indicated and benzedrine and ephedrine possibly contraindicated? Is sodium phenobarbital used in cocaine poisoning only if the patient is in convulsions, or would it be used also on an unconscious patient? What is the proper treatment of cocaine poisoning? Boyd and Connell state that ergotamine diminished but did not reverse the effect of benzedrine and ephedrine in raising blood pressure and concluded that to a certain extent these drugs acted directly on the muscle of the blood vessel, to cause, presumably, vasoconstriction. What is the explanation then of the increase of blood flow, presumably vasodilatation, in the perfusate of ergotamized frogs after ephedrine? The results seem contradictory unless some other factors enter. Will you please state the point of action (muscle, nerve cell or neurocellular junction) of ephedrine, benzedrine and epinephrine, and the reason for the effects of cocaine and ergotamine when used with these drugs.

M.D., Pennsylvania.

ANSWER.—The most generally acceptable explanation of the mechanism of sympathetic responses is that the impulse comes down the sympathetic nerve fiber and liberates epinephrine or some substance closely related to it within the smooth muscle cell. This epinephrine then diffuses from the nerve ending into the contiguous muscle protoplasm at the myoneural junction, where it unites with either sympathin E or sympathin I. This new complex then causes physical or chemical changes in the muscle protoplasm which result in contraction or relaxation.

Cocaine increases the responses to sympathetic nerve stimulation and also to the injection of epinephrine, as was shown by Fröhlich and Loewi in 1910. The best available explanation for the latter effect would seem to be that cocaine makes the smooth muscle cell membrane more permeable, so that injected epinephrine can more readily get through it and thereby produce a sensitized or increased effect. Only a small proportion of smooth muscle cells, however, can be demonstrated to have nerve endings within them. The remainder of the cells are supposedly brought into action by diffusion of epinephrine or epinephrine-sympathin complex into them from muscle cells which do contain sympathetic nerve endings. Cocaine, by making these cell membranes more permeable, would increase the ease of diffusion of the stimulant and thus produce a heightened response. Ergotoxin or other ergot alkaloids block the responses to the augmentor sympathetic impulses not by paralyzing the nerve endings or production of sympathin but apparently by preventing epinephrine-sympathin E complex from reacting with the muscle protoplasm. These concepts cannot be taken as being entirely proved, but they afford the most rational explanation of the facts now available.

It was discovered by Tainter in 1925 that responses to the other amines, such as ephedrine and tyramine, did not follow the pattern of epinephrine reactions, particularly with regard to the cocaine phenomena. He showed that at the time when cocaine sensitized the response to epinephrine it desensitized or abolished the responses to ephedrine, tyramine, benzedrine and propadrine as well as to other less widely known compounds of this sympathomimetic group. The easiest explanation of how these compounds produce sympathetic effects in the uncocainized preparations would be that they stimulated the nerve endings and caused the liberation of epinephrine, thus starting the typical chain of sympathetic activation. However, the cocaine results make this a difficult hypothesis to sustain. More likely possibilities would be that these compounds produce their stimulation beyond the nerve endings either by reacting with the muscle protoplasm directly or by chemically uniting with the sympathins and thereby producing a stimulating material similar to the epinephrine-sympathin complex but not identical with it.

Ergotoxin produces a reversal of sympathetic responses to epinephrine by preventing the responses to the epinephrine-sympathin E augmentor complex. In the blood vessels, this allows the vasodilator action of the epinephrine-sympathin I complex which is liberated simultaneously to be observed in the fall of blood pressure. There is also the possibility of acetylcholine being liberated by these vasodilator fibers and contributing to the sympathetic inhibitor responses.

The sympathetic nervous system of the frog is poorly differentiated in comparison to that of mammals, and particularly man, and the pattern of responses to many sympathetic drugs shows much variation in this species from that of the higher animals. In addition, these reactions are so complex and are so incompletely understood, and the data in many cases contain so many conflicting elements, that no theory can be expected to reconcile completely all the reported observations.

Some of the better established facts have immediate clinical importance. Thus, cocaine abolishes or greatly diminishes the responses to many of these compounds. This has been shown experimentally under a wide variety of conditions, and it has also been demonstrated clinically. Therefore, these epinephrine substitutes cannot be used indiscriminantly for their usual effects on the circulation when cocaine and possibly other local anesthetics are in the body. About the best of the epinephrine substitutes under these conditions is neosynephrine, which chemically is close enough to epinephrine so that its effects are not abolished by the local anesthetic, and yet is sufficiently dissimilar so that its actions are not potentiated. Therefore, in cocaine poisoning neosynephrine would seem to be the drug of choice for stimulating the circulation, rather than epinephrine, the effects of which might be unpredictably potentiated, or the other amines, the effects of which might be greatly diminished or completely abolished.

In poisoning from local anesthetics, phenobarbital is used to depress the central nervous system sufficiently to prevent convulsive seizures. If the patient is not having convulsions but is in a depressed state, administration of a further depressant would seem to be unwise. Probably the most important single measure in preventing catastrophes from local anesthetics is to maintain adequate artificial respiration. If there is a lowered level of blood pressure, this can be combated by cautious doses of epinephrine or, better still, by full doses of neosynephrine. While it is true that in shock or collapse strong vasoconstrictors, such as epinephrine, may tend to pool the blood in the arterial side of the circulation, the more important requirement is to maintain effective levels of pressure and blood flow through the cerebral circulation.

SAFECOTE INSULATING MATERIAL

To the Editor:—An electrician gets a skin eruption on his hands and arms when working with electric wire made by the Paranite Cable and Wire Company, the insulating of which is impregnated with "Safecote," which makes it fireproof. Could you tell me what the substance is which might irritate the skin? Other kinds of insulation which are not fireproof do not irritate this man.

W. E. WILSON, M.D., Northfield, Minn.

ANSWER.—The Paranite Cable and Wire Company was given an opportunity to furnish precise information as to the nature of "Safecote." Safecote is a copyrighted name applied to a rubber covered cotton-braided building wire, which is treated with compounds to make it moisture and flame resisting. The cotton braid on Safecote wire is first impregnated with a compound known as a saturator consisting of asphalt and stearin pitch. The wire is then given an intermediate coat of a compound consisting of stearin pitch and montan wax. Wire that is to remain black is given a further treatment of a lubricant dressing, which consists of montan wax, paraffin wax and gilsonite. Wire that is to be colored for reasons of polarity is coated over the intermediate coat with a coloring solution which consists of an alcohol soluble gum, a pigment and a plasticizer, such as castor oil.

Even without additional facts it may be stated that several of the chemicals mentioned are quite capable of producing skin disorders. Contact with the rubber covered cotton braid may

lead to definite dermatitis if certain accelerators were used in connection with the curing of the rubber. In this situation patch tests should be used with the various portions of the wire insulation, particularly the rubber coated braid.

The entire situation with respect to dangers from wire coating material cannot be disposed of by pointing out that dermatitis may follow contact. In extensive use in this industry are a variety of chlorinated naphthalenes and chlorinated diphenyl. The disturbing "color acme" apparently is linked with the chlorination. In addition to injury to the skin, profound systemic disease may be produced under conditions of appropriate exposure in which the liver may be severely damaged. In some instances these insulating waxes may be dissolved in carbon tetrachloride, toluene or benzene. Obviously these substances possess toxic properties, and when their vapors are inhaled or when the skin is brought in contact with them disturbances may arise. The entire problem of the toxic properties of chlorinated hydrocarbons in connection with their use in the wire industry formed the basis of a symposium presented in part in the *Journal of Industrial Hygiene and Toxicology* **19**:283 (Sept.) 1937 in a publication by Drinker and his associates. A separate publication based on this symposium has been prepared by the Harvard School of Public Health under date of June 30, 1937.

POSSIBLE INTESTINAL OBSTRUCTION FROM GUMMA

To the Editor:—A patient with complete obstruction for three days, a history of 25 pounds (11 Kg.) loss of weight, and constipation of a year and a half, was operated on. A hard hour glass constrictive mass completely obstructive in the descending colon was found, which was thought to be a cancer. There were no detectable metastases to other viscera. The operation consisted of cecostomy for relief of obstruction. Signs of syphilitic heart disease with signs of central nervous involvement, as evidenced by Argyll Robertson pupils, prompted the taking of a Kahn test, which was 4 plus in all dilutions. The patient has made a nice recovery and after two injections of a bismuth compound plus iodide has had normal bowel movements. I have been unable to find any parallel cases. If the mass is a gumma, is it reasonable to hope that antisyphilitic treatment will keep the lumen of the involved portion of the colon patent?

M.D., Texas.

ANSWER.—Syphilis of the large or small bowel is apparently rare; in fact, it is so rare that records of indisputable cases are not found in the literature, although reports of presumptive cases appear occasionally. A similar case (not reported) with rapid disappearance of the obstruction following two injections of arsphenamine and a positive Wassermann test of the blood as the only evidence on which to base the diagnosis of syphilis has been noted. A conclusive diagnosis of syphilis of the colon should be based on (1) x-ray demonstration of the mass in the bowel, (2) serologic or clinical evidence of syphilis, (3) pathologic changes characteristic of syphilis in tissue from the mass, (4) involution of the mass under antisyphilitic treatment and (5) observation for five years or more.

Experience would indicate that, if the construction is due to a gumma, antisyphilitic treatment will keep the lumen open; if, in fact, obstruction recurs it would suggest that syphilis is not the cause of the bowel condition.

DERMATITIS FROM DRESS SHIELDS

To the Editor:—A patient has a dermatitis corresponding to the size of her dress shields. I should like to know how dress shields are made and what kind of chemicals are used in the manufacturing process.

M.D., Wisconsin.

ANSWER.—Dress shields are made of cloth impregnated with a rubber compound. This is covered by ordinary fabric. The cause of the dermatitis is probably the rubber, which is subjected during manufacture to the action of one of many forms of "accelerator." By the use of these the time needed for vulcanizing is reduced from hours to minutes. Most of the accelerators are chemicals and may be irritating to the skin or are among those substances to which the skin becomes sensitized easily. Aniline, paraphenylenediamine, thiocarbanalide, sulfur chlorides and hexamethylenetetramine (the familiar methenamine used as a urinary antiseptic) are some of the common ones. Methenamine gives off formaldehyde in an acid medium, which makes it valuable in the bladder when the urine is acid. Acid sweat in the axilla acts in the same way and formic acid is produced, which is an active irritant (Shepherd and Krall: Poisons in the Rubber Industry, *J. Indust. Hyg.* **2**:33, 1920). The cloth covering of the dress shield is no protection when it is saturated with sweat. The rubber industry is trying to replace the more irritating accelerators with those less apt to cause trouble.

It may be possible to prevent the dermatitis in the case under discussion by the substitution of paper dress shields for the ones made of rubber. The paper ones are pinned to the dress and discarded when they become soiled. Attempts to lessen axillary sweating are not advisable. A degree of suppression of axillary sweating sufficient to warrant discarding the dress shields cannot be obtained from the use of x-rays with safety, though excessive sweating can be lessened in this way.

TENDER NODULES AFTER INTRAMUSCULAR INJECTION

To the Editor:—A woman, aged 33, cannot take sedatives by mouth and she has an idiosyncrasy to opiates. The nurses gave her four capsules of soluble phenobarbital into the biceps muscles (two in each arm) over a period of forty-eight hours. The injections were given by several different nurses, who have often given the same drug. Several weeks later the patient reported that she had tender nodules at the site of each injection. On palpation there were deep, firm, slightly tender nodules. I felt that they would go away in time, and they are now less tender but are still present. Another physician has told her they will persist for life. What is the proper treatment, if any? What is the prognosis as to their disappearance? Is this a frequent enough happening to make one hesitate to use the drug?

M.D., New York.

ANSWER.—To answer the third question first, a completely soluble, nonirritating substance should be promptly absorbed from the muscle without unpleasant after-effects. Soluble phenobarbital is usually such a substance; therefore it is assumed that some complicating factor was present in this case.

Water solution of sodium phenobarbital is rather unstable and should be freshly prepared and injected at once lest irritating substances form in the solution. Rapid injection into the muscle and, indeed, slow injection in a person who bleeds easily may result in a small hematoma at the site of injection. The statement that the patient cannot take sedatives by mouth raises the question of a personal sensitiveness to the drug that might produce sufficient tissue reaction to cause the symptoms.

There is no specific treatment. The application of heat may hasten resolution but resolution takes place in any event. Such nodules usually completely disappear. In infrequent instances they may remain palpable for a long period of time but they become so small and insensitive that they are of no concern to the patient.

MUSCULAR DYSTROPHY

To the Editor:—A boy, aged 14, fell from a height of 15 feet at the age of 3, striking his spine just below the neck. Since then a progressive atrophy has developed of all the muscles of the body except the lower part of the legs, which have apparently remained normal. He is emaciated, with atrophy of all muscles and with little or no subcutaneous fat. The skin is dry, and the reflexes are absent with exception of the pupillary reflexes, which are normal in reaction to light and in accommodation. He walks with a peculiar swaying gait and has a marked lordosis. When he falls or lies flat he has a characteristic "climbing on himself" method of rising, suggesting pseudohypertrophic muscular dystrophy. There is no history of any similar condition in his immediate or distant family. Can you suggest a diagnosis and any type of treatment? Do you think aminoacetic acid and a high protein diet would be of value?

M.D., Pennsylvania.

ANSWER.—In spite of the fact that there is no family history, the description of the patient is such that muscular dystrophy is practically the only disease to be considered. As trauma appears to have no part in this disease, the history of the fall at the age of 3 should be disregarded. Neither aminoacetic acid nor a high protein diet has proved to be of any value in dystrophy. One or two patients have been somewhat relieved and perhaps made 5 or 10 per cent better by oral prostigmine. Before any treatment is considered, the diagnosis should be made certain by biopsy.

ADRENAL CORTEX IN HAY FEVER

To the Editor:—Will you kindly supply information concerning the treatment of hay fever by the use of adrenal cortex extract?

LOUIS W. GERSTNER, M.D., Kalamazoo, Mich.

ANSWER.—A review of the literature on the use of adrenal cortex extract is given in a paper by Prickman, Giles and Koelsche (*J. Allergy* **158**:9 [Jan.] 1938). These workers administered the extract intravenously to nineteen patients, of whom sixteen had asthma, two severe vasomotor rhinitis and one severe urticaria and angioneurotic edema. They concluded that the treatment gave little or no specific benefit in these conditions. More favorable results on the use of the extract are reported by the Pottengers (*California & West. Med.* **43**: 10 [July] 1935), who treated fifty asthmatic patients. The adrenal cortex extract in these cases was administered orally. Thirty of the fifty patients were greatly improved. It is noteworthy that a program of rest was required of each patient

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in addition to the medication. The reports of other workers who used the extract in allergic conditions are much less favorable than the report of the Pottengers. No reference has been found to the use of adrenal cortex extract in uncomplicated hay fever. Rappaport and Hecht (unpublished data), however, gave massive doses of adrenal cortex extract by mouth coseasonally to eighteen ragweed hay fever patients in 1935 with no noticeable benefit. It is questionable whether the material is at all effective orally.

EPHEDRINE TO PREVENT TRANSFUSION REACTIONS

To the Editor:—In the hope of preventing unfavorable reactions following a blood transfusion in an allergic patient, three-eighths grain (0.024 Gm.) of ephedrine was given by mouth and immediately following the transfusion of 500 cc. of whole blood, three-fourths grain (0.05 Gm.) of ephedrine hypodermically. No reaction was noted. Four days later another 500 cc. of whole blood was given and the ephedrine administered as before. Four hours later her temperature rose to 100 F. No other reactions were noted. Manifestly these two transfusions are of no statistical value. I am interested, however, to know whether ephedrine has been used in this way before and whether or not it has been found of value in the prevention or amelioration of undesirable reactions of transfusion of whole blood.

J. KINGSLEY MACDONALD, M.D., White Plains, N. Y.

ANSWER.—So far as is known, epinephrine and ephedrine have not been used in transfusions of human blood but when injecting serum, e. g., tetanus or diphtheria antitoxin, it should be used prophylactically if the skin or conjunctival tests for horse serum are positive, and therapeutically if serum sickness develops. The occurrence of serum reactions in man results usually from the introduction of a foreign or heterologous type of serum. It should not occur from injections of human serum, which is a homologous type. However, such reactions do rarely occur, and have been reported in the literature (Tuft, Louis: Clinical Allergy, Philadelphia, W. B. Saunders Company, 1937). The classic example is the case reported by M. A. Ramirez (Horse Asthma Following Blood Transfusion, THE JOURNAL, Sept. 27, 1919, p. 984), in which, following transfusion from a horse sensitive donor, the recipient developed a similar sensitivity on contact with horses. H. C. Berger (*M. Clin. North America* **7**:1169 [Jan.] 1924) reported the occurrence of urticaria resulting from the injection of blood from a horse sensitive person into one who had previously received antistreptococcus and normal horse serum. Duke and Stofer (*ibid.*, p. 1255) reported a case of immediate serum reaction in a milk sensitive recipient whose transfusion was from a donor who had ingested milk. DeBesche (*Berl. klin. Wchnschr.* **46**:1607, 1909) reported a case of sudden dyspnea following transfusion. Sensitivity from transfusion is temporary and disappears in a month or less. One cannot be permanently sensitized by blood transfusion or by any other method (except probably by inheritance). The Prausnitz-Küstner reaction (passive transfer) is an example of temporary local sensitivity of the skin which is frequently useful in determining the cause of attacks of allergic conditions.

DIET AND URIC ACID STONE

To the Editor:—Kindly outline the medical and dietary treatment of uric acid stone formation in the kidneys.

M.D., Alabama.

ANSWER.—To answer this question one would have to assume certain conditions: that the urine is not infected, that there is no obstructive uropathy, and that the size of the stone or stones is within the limits usually conceded as compatible with spontaneous passage (less than 1 cm. in diameter). Granted these premises, the question resolves itself into a discussion of purine metabolism and the control of uric acid excretion.

From 0.3 to 1.2 Gm. of uric acid is excreted in the urine daily, depending on the diet. This uric acid is either exogenous (from food) or endogenous (derived from the breakdown of body tissues). Purine bodies are formed from the nucleoalbumin of highly cellular glands, such as thymus, liver or kidney, and extracts of muscular tissue; methyl purines are highly concentrated in tea, coffee and cocoa. Nucleoprotein is changed in the process of digestion into nucleic acid, which in turn is split into nucleotides. Each nucleotide is formed of phosphoric acid plus a carbohydrate, plus a nitrogenous base. Concerning the endogenous supply, even on a purine-free diet man will excrete from 0.3 to 0.6 Gm. of uric acid daily as the result of the breakdown of his cellular tissues. Only from 60 to 70 per cent of uric acid is eliminated in the urine; the rest is probably changed into urea. A definite explanation of the formation of uric acid kidney infarcts has not been given but they are most probably due to a colloid imbalance in the urine. An acid urine may precipitate uric acid crystals.

True uric acid stones rarely demand treatment. They are usually precipitated as crystals which pass spontaneously, causing minor attacks of colic at the time. These patients pass small stones and gravel.

The diet may affect their course, but since even on starvation regimens the uric acid excretion is only about halved it must be realized that dietary treatment is in no sense curative. A purine-free diet would be too rigorous; the diet recommended is a good, mixed, easily digested one, avoiding only highly cellular organs, such as liver, sweetbreads, kidneys and brains. The bowels should be regulated with preferably a mild saline cathartic. Plenty of milk is recommended both because it is purine-free and because of its high vitamin content.

Since the formation of stones depends more on the concentration of a salt than on the total amount excreted in a day, the forcing of fluids is probably more efficient in the dietary treatment than reduction of purine-containing foods. The concentration can be as well controlled by doubling the fluid intake as by restricting the food.

In the presence of urinary infection, uric acid calculi quickly become coated with secondary salts. The problem is then much more complicated and dietary treatment is used not so much to control the size of the stone as to combat infection. The acid ash, high vitamin diet is extensively used in appropriate cases of this group.

In any stone, no matter what the composition, if it will not pass spontaneously, surgical treatment is necessary.

SEROLOGIC RELAPSE IN SYPHILIS

To the Editor:—A man, aged 37, has been treated for syphilis since February 1936. He was previously treated by another physician for about fourteen months with neoarsphenamine and oleo-bi. The Wassermann reaction became negative. He was allowed a month's probation before returning for a Wassermann test. He did not return until six months had elapsed, when his Wassermann reaction was 4 plus. Since February 1936 he has had continuous overlapping treatment, starting with bismuth. This has consisted of two courses of neoarsphenamine, ten and twelve doses respectively (0.6 Gm.) and four courses of mapharsen (0.06 Gm.) varying from ten to fourteen doses of thio-bismol, given at intervals of from three to four days. The Wassermann reaction was 4 plus for the first ten months of my treatment. It then became 1 plus, and the Kahn reaction became 1 plus Nov. 10, 1936. It remained so until September 16, when another laboratory (laboratory B) reported the Wassermann, Hinton and Kahn reactions negative. Again laboratory B reported all three negative, Dec. 10. Now (Feb. 28, 1938) laboratory A reports the blood Wassermann reaction 2 plus and the Kahn reaction negative, and laboratory C reports the Wassermann and Kahn reactions doubtfully positive (February 11). I have been unable to get the patient to submit to a spinal Wassermann test as yet, although I have tried to show him the dangers of untreated syphilis of the central nervous system. However, today he gave me his promise to have a spinal Wassermann test made in the near future. I realize that a neurorelapse may have occurred during the six months that he was untreated, thus accounting for the persistently positive reaction. What course should be pursued should the spinal fluid be negative? Should neoarsphenamine and bismuth be continued in full doses until the blood Wassermann reaction is absolutely negative, or has a total of three years' treatment been sufficient for the present, without regard to the 2 plus or doubtful positive serologic reactions obtained recently? There are no signs or symptoms referable to the central nervous system or vascular system. In fact, the patient is in good condition. Should the spinal fluid be positive, I suppose the treatment should be directed toward the central nervous system, with tryparsamide instead of neoarsphenamine.

M.D., Pennsylvania.

ANSWER.—In the first place, the significance of the Wassermann relapse after the patient's fourteen months of treatment at the hands of another physician depends on what was wrong with the patient when his treatment started—whether he had early or late syphilis, which the inquirer does not state. If he had early syphilis there may have been, as stated, an opportunity for reinfection of his nervous system; if he had late syphilis, this is not the case. Whether he had early or late syphilis and if his spinal fluid is now completely negative, he has had enough treatment. The discrepancy between serologic results in laboratories A and B is certainly due to technical variation in the two laboratories and not to variation in the patient.

The spinal fluid examination should include cell count, quantitative estimation of the protein content, quantitative titration of the Wassermann test in amounts ranging from 0.1 to 1.0 cc., and colloidal mastic or gold curve.

If the spinal fluid is positive, the type of desirable treatment will depend on the ensemble of the spinal fluid picture. If the spinal fluid shows the paretic formula, treatment should be initiated with malaria to be followed by tryparsamide.

VITAMIN AND MINERAL REQUIREMENTS OF NORMAL DIET

To the Editor:—How can one tell whether a patient is getting sufficient mineral in his diet? Is it true that the average American gets more minerals and vitamins than he needs? How can one be sure that a patient taking no milk gets sufficient calcium?

M.D., Iowa.

ANSWER.—Since the availability of minerals differs according to the type of food, their source is an important consideration. Vegetables as a rule contain a less available form of calcium than does milk. Their iron is also probably not completely available. Sodium, potassium and magnesium, while required for health, are so plentifully distributed in foods that ordinarily they do not have to be considered in formulating dietary standards. The notion that the average American receives a greater supply of vitamins than he needs is not entirely compatible with the known facts. Exceptions must be made, for example, in the case of pregnant or lactating women. There is increasing evidence, however, that mild and frequently unrecognized deficiencies of some vitamins are more prevalent in this country than formerly was believed.

The "dietary standards," which are indications, not rules, are based on the minimum requirement for each substance plus an added 50 per cent, or in some cases 100 per cent, margin for safety. As expressed by H. C. Sherman (Chemistry of Food and Nutrition, ed. 5, New York, Macmillan Company, 1937, p. 520), for normal adults these standards are: calcium 0.68 Gm. (10 grains), phosphorus 1.3 Gm. (20 grains), iron 0.012 Gm. (0.185 grain). A discussion of the vitamin requirements appeared in THE JOURNAL Jan. 15, 1938, page 227.

TIME OF DEATH—BLEEDING AFTER DEATH

To the Editor:—1. When is a person judged to be dead, i. e., at what moment does death occur? 2. Would profuse bleeding from the ears and nose on one's arrival at the scene of an accident mean that a person was still alive? There are two people in the same automobile. One hour after the accident the coroner states that both are dead. The woman was bleeding profusely from the nose and ears one-half hour after the accident. 3. How long after death does one continue to bleed freely from a laceration or a skull fracture?

M.D., Indiana.

ANSWER.—1. Death has taken place when respiration and heart action have stopped permanently.

2. Yes, if the flow of blood continues longer than explainable by the running out, on change of position, of blood or bloody fluid accumulated in the ears and nose and adjacent parts. It is of course not possible that "profuse bleeding" from the nose and ears could go on continuously for half an hour after the heart has stopped beating. Is it excluded that what is called "bleeding profusely" may not have been due to the running out of the ears and nose of bloody cerebrospinal fluid?

3. With death the blood stops circulation; hence after death only the fluid blood in or about the parts involved can run out from a laceration or fracture. The amount of such "bleeding" will vary greatly in different cases and might well be influenced by change in the position of the body. To "bleed freely" in the usual sense is impossible after death.

ARTIFICIAL PRODUCTION OF URTICARIA AND ALLERGY

To the Editor:—Is there any known way of producing urticaria in a normal person? Would it be possible by injecting some substances under the skin or by any other method to make a person sensitive with the result that urticaria would develop?

M.D., Minnesota.

ANSWER.—Urticaria can be artificially and temporarily produced in a normal person by any one of three methods: 1. It may be produced by the prophylactic or therapeutic injection of some form of animal serum, as horse serum (diphtheritic, antitetanic). A large percentage of persons exhibit the allergic manifestation known as "serum sickness"; urticaria is a prominent feature of this condition. 2. If an allergic donor gives blood for a transfusion, the nonallergic recipient may temporarily become hypersensitive to the antigen or antigens which caused the donor's symptoms; e. g., ragweed pollen, horse dander. Urticaria in the recipient may follow contact or ingestion of the offending substance. Fortunately such induced hypersensitivity is only temporary. Ramirez (Horse Asthma Following Blood Transfusion, THE JOURNAL, Sept. 27, 1919, p. 984) reported a case in which transfer of horse serum sensitivity followed the transfusion of a nonallergic recipient with blood obtained from a donor who had asthma from horse dander. This type of sensitization is rare in human beings. 3. In the classic method of testing by local passive transfer (Prausitz-Kustner reaction, *Centralbl. f. Bakt.* **86**:160, 1921), blood is drawn from the allergic person and the serum is injected into the skin of a normal person. About forty-eight hours later the injected site usually shows an itching wheal (urticarial reaction) when injected with antigens to which the donor is allergic. Other parts of the recipient's skin are usually negative to these antigens. Walzer (*J. Allergy* **1**:231 [March] 1930) has also shown that these sensitized sites frequently develop urticarial wheals when an antigenic food, such as egg, is eaten. This local hypersensitivity likewise disappears in a few weeks. There is no known method by which a normal person can be made permanently hypersensitive so that he will show symptoms of urticaria, asthma or hay fever. Of course the "normal" person may not really be normal. He may, probably through inheritance, be potentially allergic; when his threshold of resistance has been exceeded, as by a large dish of crabmeat, urticaria may occur for the first time. It is known, however, that repeated exposure to certain weeds, such as primrose, can render most persons permanently hypersenstive; however, the symptoms produced are those of contact dermatitis (dermatitis venenata); the hereditary factor is absent in this condition.

GANGLION OF TOE

To the Editor:—A man, aged 30, about four months ago had an ingrown toenail on the right foot. I removed the lateral half of the nail. Removal was immediately followed by the flowing of a thick, colorless, gelatinous matter. He was relieved for two months, when he again returned with the same infected toe. I again performed a procaine block anesthesia and carried out the operation as described by Dr. R. W. Bartlett in THE JOURNAL, April 10, 1937, page 1257. The only tangible history obtainable is that about ten years ago he was playing football and hurt his toe, which became painful and swollen for a few days. About two years ago the toe became reddened and slightly swollen, again becoming normal with no ill effects. The swelling and redness recurred every few months or so until four months ago. Since operation a constant flow of this gelatinous material has been coming out of a sinus at the base of the nail leading down into the interphalangeal joint. What is the cause of this gelatinous material? What would be a proper diagnosis? Please outline a treatment. I have been treating the sinus with phenol; is this proper? Would it be advantageous to use a sclerosing agent?

M.D., Massachusetts.

ANSWER.—The clear gelatinous material discharged following operation on the toe is indicative of a ganglion, which may originate from the joint capsule or tendon sheath or of a bursa. Excision of the sac or bursa and the sinus tract is the desirable procedure. If this is not possible, thorough curettage of the sinus tract and the sac may lead to healing. Sclerosing solutions such as sodium morrhuate will at times lead to healing. If there is an opening into the joint, however, the use of a sclerosing solution is inadvisable because of the damage that may be done to the articular surfaces.

DERMATITIS FROM INVERT SUGAR FOR VARICOSE VEIN INJECTIONS

To the Editor:—I am treating varicose veins on the lower extremity by injecting invert sugar. I used 10 cc. in the small veins on the dorsum of the foot and around the ankle, November 15; I used 10 cc. in the veins on the outer side of the leg, November 18. The patient came to the office November 21 with a dermatitis extending from the ankle to the upper third of the leg. The patient complained of severe burning and itching of the leg; there is also a slight dermatitis on both arms and on the sacral regions. Could this be due to the solution used?

M.D., Mississippi.

ANSWER.—Sensitization to drugs used for obliterating varicose veins is not uncommon; quinine, sodium morrhuate and potassium oleate are occasionally known to produce such reactions. However, it is difficult to conceive that a solution of invert sugar would produce sensitization unless one added some other ingredient, as an antiseptic or anesthetic, to the ampule. The solution might be tested for allergens with special reference to nitrogenous products, as impurities in the invert sugar. Such sensitizations may take the form of an itching dermatitis localized mainly to the injected areas or to the course of the vein; in other instances, a generalized urticaria develops and rarely an edema of the glottis with bronchial spasm.

ETIOLOGY OF INFLUENZA

To the Editor:—I recently received information that influenza is now known to be caused by a streptococcus. I did not know that the cause had been discovered. Is there now general agreement as to the causation?

M.D., Michigan.

ANSWER.—The evidence pertaining to a streptococcus as the cause of influenza is not generally accepted. Instead, a rather complete chain of evidence indicates that a filtrable virus is the primary causative agent of the disease. Isolated first by Smith, Andrewes and Laidlaw in London, England, in 1933, extensive studies have been conducted in this country by Francis

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and his associates (THE JOURNAL, Aug. 21, 1937, p. 566). The virus has been recovered in a high percentage of cases of epidemic influenza, and the serums of the convalescent patients acquire a high titer of antibodies to the virus. The virus infects ferrets and mice and has also been shown after repeated passages in animals to be capable of inducing clinical influenza in man.

AIR SWALLOWING IN SMALL CHILD

To the Editor:—A boy aged 3½, intelligent and emotional, whose birth history is negative in every respect, cried severely during the first three months of his life and has already had eczema, measles, mumps and pneumonia. He had severe rachitis with an appearance of bony deformities. The parental history is not significant except that the father is highly emotional. The child is well nourished, of normal weight and height, somewhat active and somewhat pale, but development is normal. He has had "spells" once a month, beginning one year ago. The spells endure from five to six minutes and vary from two to twenty in a day, the average number being five or six. The spells are described as follows: He begins swallowing rapidly and audibly; this is followed by peculiar noises in the stomach and complaint of stomach ache, ending in the expulsion of flatus by rectum and his assertion "All better now."

M.D., Saskatchewan.

ANSWER.—The spells described are known as aerophagia, which is a spasmodic swallowing of air followed by eructation or flatulence and is often a symptom of hysteria. This condition may be classified under the functional coordination neuroses. It is stated that the boy is intelligent and emotional and that the father is highly emotional and that the spells occur once a month. This periodic occurrence is probably associated with periods of emotional stress. A sociologic investigation of the family life might throw considerable light on the causation of these spells.

POSSIBLE MONILIA INFECTION OF VAGINA

To the Editor:—The vaginal exudate from a pregnant patient almost at full term is very thick and has somewhat the appearance of necrotic tissue. There is little odor, and removing it from the membrane leaves a bright pink surface but no ulceration. This material has been removed from the vagina a number of times during the past few months. Stained smears show a large fungus occurring in broken up rods and staining poorly with methylene blue. There is no differential reaction with the Gram stain, there is a large amount of necrotic material and there are few pus cells. Cultures on Sabouraud medium show a growth and some brownish pigment production. However, I am unable to determine the type of fungus. What treatment is indicated? What type of fungus is responsible?

M.D., Georgia.

ANSWER.—The clinical picture is that of Monilia infection, although the evidence is insufficient for a certain diagnosis. There is no specific therapy. Mechanical cleansing of the surfaces and applications of 1 per cent gentian violet will probably effect a cure.

MEDICAL TREATMENT OF CANCER

To the Editor:—Two articles on cancer research have recently appeared in the press. One, concerned with oral administration of some substance in human beings, reported approximately 60 per cent cures; the other concerned the use of spleen extract in animals. Is authentic information available on the treatment or cure of cancer? My wife is now being treated for scirrhous carcinoma by x-rays.

M.D., California.

ANSWER.—The only accepted methods in the treatment of cancer today are by surgery, x-rays and radium. Any claim that the oral administration of some substance has resulted in the cure of human cancer in 60 per cent of the cases is totally without foundation. Spleen extract has been tried in the treatment of cancer in animals and man without success. Authentic information on the treatment and cure of cancer exists in the medical literature.

ANTITYPHOID SERUMS—MISTRETTA SERUMS

To the Editor:—In an article by Biagio Mistretta *(Policlinico* **44**: 2287 [Nov. 29] 1937) mention is made of the use of intravenous or intramuscular injections of 2 per cent phenolized artificial serum for the treatment of various infectious diseases. Can you inform me whether this method has been used in this country and the phenolized serum is available commercially? Will you also inform me whether the serum for typhoid discussed by C. J. McSweeney in the Dec. 4, 1937, issue of the *British Medical Journal* is commercially available in America?

HAROLD J. HARRIS, M.D., Westport, N. Y.

ANSWER.—The use of intramuscular injections of convalescent serum for the treatment of diseases is common, but we do not know of any reports from this country concerning the method described by Biagio Mistretta. Antityphoid serums are not now commercially available here.

TRICHLOROACETIC ACID CAUTERY IN EYE

To the Editor:—Can you give information concerning trichloroacetic acid in pencil form used for cauterizing in eye work? Who makes it and where can it be produced?

D. W. BRICKLEY, M.D., Marion, Ohio.

ANSWER.—We have no information on pencils of trichloroacetic acid. A tightly wound cotton applicator on a tooth pick dipped in the solution of trichloroacetic acid may be used and the area of prolapsed iris carefully touched so that no excess of solution is used and that none touches the cornea. It is unnecessary to neutralize the acid. The iris becomes gray-white immediately after the drug has been applied. The surrounding conjunctiva becomes red the next day and the iris is again black. This must be repeated several times. It may be used daily for ten days in some cases and three times a week for three weeks in others. The treatment should be used only in small prolapses in which there is no danger of the solution entering the anterior chamber.

TREATMENT OF HODGKIN'S DISEASE

To the Editor:—Is there any treatment for Hodgkin's disease other than with x-rays and arsenic? In my patient the process has extended into the mediastinum and abdomen.

W. C. PERRY, M.D., Louisburg, N. C.

ANSWER.—There is no successful treatment for Hodgkin's disease. X-rays or radium properly applied contribute to the patient's comfort and may perhaps lengthen his life, although the latter is questionable. Arsenic is thought to have a beneficial effect on the size of the glands. Various emulsions and other preparations have been used in the form of vaccine therapy but without proved benefit.

INCOMPATIBILITY OF EPHEDRINE AND IODINE

To the Editor:—What is the incompatibility between iodine and ephedrine compounds? One manufacturer of an iodine solution states on the label of his package, "Incompatible with ephedrine and ephedrine compounds."

FRANCIS BURTON BLACKMAR, M.D., Columbus, Ga.

ANSWER.—The statement that iodine is incompatible with ephedrine and ephedrine compounds is correct. When ephedrine hydrochloride in aqueous solution is mixed with either the tincture of iodine or the compound solution of iodine, a precipitate results that is soluble in alcohol. When to ephedrine alkaloid in alcoholic solution is added either the tincture of iodine or the compound solution of iodine, the liquid remains clear but gradually becomes decolorized on standing, as happens with iodine in other alkaline solutions.

SPLIT FINGER NAILS

To the Editor:—In THE JOURNAL May 19, 1928, was an article by W. W. Carter on split finger nails. His method of treatment by the use of sutures through holes drilled in the finger nail appears excellent. However, I suffered from this trouble and the method described did not seem satisfactory to me because I had to scrub my hands frequently. I did not like the idea of the holes or the roughness of the knots. I feared for the surgical cleanliness of my hands, not only on account of the uncertainty of the thoroughness of the mechanical cleansing but also because of the ease with which these recesses could become contaminated and probably hold foreign material. Finally I arrived at the following procedure, which has given good results: Celluloid dissolved in amyl acetate was painted on the thumb nail. Several coats were applied, each coat being allowed to dry before the succeeding coats were applied. One treatment will last for two or three weeks as a rule. A convenient and cheap source of celluloid is old unbreakable watch crystals which the jeweler is ready to discard. One small crystal disolved in about 20 cc. of amyl acetate makes a solution of about the right consistency.

S. M. MACLEAN, M.D., Tacoma, Wash.

HIGH HUMAN TEMPERATURE

To the Editor:—The subject of high human temperature is discussed in Queries and Minor Notes in THE JOURNAL, February 5, page 461, and April 2, page 1127. Regarding the highest temperature that the human body can reach and still survive, the following (taken from Reid, W. D.: One Hundred and Fifty-Eight Cases of Heat Prostration Treated at the Boston City Hospital, July 2-13, 1911, *Boston M. & S. J.* **165**: 643 [Oct. 26] 1911) may be of interest:

Temperature	Cases	Deaths
—105	10	1
105—106	8	4
106—107	8	5
107—108	6	6
108—109	14	10
109—110	15	12

The high mortality, 58 per cent, in these cases of heat stroke was doubtless influenced by the complications: At admission to the hospital: alcoholism, failing heart, edema of the lungs and convulsions. Subsequent: delirium tremens, persistent coma, pneumonia and recurrence of fever.

WILLIAM D. REID, M.D., Boston.

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Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, May 14, page 1697.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, June 20-22 and Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral examinations for Group A and B applicants* will be held at San Francisco, June 13-14. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held at various centers of the United States and Canada, Oct. 17. *Final date for filing applications is Sept. 1.* Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Suite 1210, Des Moines, Iowa.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General oral, clinical and pathological examinations for all candidates (Groups A and B)* will be conducted in San Francisco, June 13-14. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: San Francisco, June 13; Washington, D. C., Oct. 8; Oklahoma City, Nov. 15. *All applications should be filed immediately and case reports, in duplicate, must be filed not later than sixty days before the date of examination.* Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Chicago, June 10-11. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: San Francisco, June 10-11. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: San Francisco, June 13-14. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec. Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: San Francisco, June 11. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: San Francisco, June 10-12. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: Examination for candidates living along the northeastern and southeastern seaboards and western part of the United States, latter part of May. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: San Francisco, June 11-13. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

District of Columbia January Report

Dr. George C. Ruhland, secretary, Commission on Licensure, reports the written examination held at Washington, Jan. 10-11, 1938. The examination covered 9 subjects and included 60 questions. An average of 75 per cent was required to pass. Eight candidates were examined, all of whom passed. Nine physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine		(1936)	81.3, 83.8, 84.6, 87.8, 90.3
Georgetown University School of Medicine		(1936)	86.3
Long Island College of Medicine		(1936)	83.8
Temple University School of Medicine		(1935)	78.5

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
George Washington Univ. School of Medicine		(1935), (1936)	N. B. M. Ex.
Georgetown Univ. School of Med.		(1934), (1933), (1936, 3)	N. B. M. Ex.
University of Louisville School of Medicine		(1934)	N. B. M. Ex.
Duke University School of Medicine		(1935)	N. B. M. Ex.

Hawaii January Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, reports the oral and written examination held at Honolulu, Jan. 10-13, 1938. The examination covered 10 subjects and included 80 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Two physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of California Medical School		(1935)	84.8
Loyola University School of Medicine		(1936)	78.2

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1935)	N. B. M. Ex.
University of Pennsylvania School of Medicine		(1935)	N. B. M. Ex.

Book Notices

Surgical Diseases of the Mouth and Jaws. By Earl Calvin Padgett, B.S., M.D., F.A.C.S., Associate Professor of Clinical Surgery, University of Kansas School of Medicine, Kansas City, Kansas. Cloth. Price, $10. Pp. 807, with 334 illustrations. Philadelphia & London: W. B. Saunders Company, 1938.

The material of this book covers a much broader field than the title would indicate. Medical diseases and some surgical conditions of the pharynx, larynx, esophagus and neck, as well as plastic surgery of the face, are included. These subjects would not be looked for in a book with this title. Dr. Padgett has attempted, as he states in his preface, to cause his book to appeal to the dental student, the medical student, the dentist, the physician, the surgeon, the nose and throat specialist, the dermatologist and the radiologist. Although this is a difficult task, as is evident from the arrangement of the book, it well reflects the breadth of the author's interests as teacher and surgeon. The author stresses the value of a broad knowledge of gross and microscopic pathology. The book is well illustrated with diagrams, photographs of patients, roentgenograms and photomicrographs. The chapters on plastic surgery are excellent, particularly the chapter on congenital deformities; they are indicative of wide experience in this field. The student will find this book a very careful review of the literature and an excellent summary of the material under discussion. Some surgeons would like to read, in subsequent editions, more material springing from the author's own considerable surgical experience.

Mentality and Homosexuality. By Samuel Kahn, B.S., M.A., M.D., Associate Attending Neurologist at the City Hospital and Central Neurological Hospital, New York. Cloth. Price, $3. Pp. 249. Boston: Meador Publishing Company, 1937.

This small book gives a perfectly clear and accurate description of the homosexuals interviewed and studied by the author in the prisons at Blackwell's Island, New York. One is struck not only with the clarity of description but with the honesty of the writer, who puts things down exactly as he saw them without any particular theory to promulgate. The book will be a welcome addition to the libraries of those who take a psychoanalytic view of homosexuality. Those, however, who take the stand that homosexuality is, in the largest number of cases, due to endocrine influences and to the hormones poured into the system by the sex organs of the individual will have much to criticize in this work. Like all psychoanalysts, the author hardly makes any mention of the sex organs as the cause of the condition except in a slight reference that the endocrine system among others should be investigated.

The author in his accurate description of the homosexual brings out the fact that, aside from the particular anomaly, the homosexual differs little from other people, that he has the same vices, the same virtues as the rest of mankind and that his anomaly does not prevent him from becoming a great genius. The author also brings out the fact that the homosexual does not consider himself a degenerate but that in reality (and this is distinctly contrary to psychoanalytic conception) his loves and attractions are distinctly in accord with his endocrine reactions. When one considers that in animals the sex attractions and desires can be changed by the investigators simply by removing the sex organs of the animal and substituting those of the opposite sex, without any change in the environment of the animal, the cause of homosexuality in the human race can be easily understood by comparison and inference. When at autopsy or at operation in some of these human homosexuals one finds sex organs of the opposite sex in the body, and also when one finds in some of these homosexuals that the ratio between the male and the female sex hormones in the blood is disturbed, one need not look for environment or infantile accidents as a cause of the condition but conclude that it is the endocrine hormones which in the majority of cases are the cause of the abnormality.

Although the author is a psychoanalyst and views everything from the standpoint of psychoanalysis, his own accurate description of the homosexuals would constitute the greatest argument in favor of the endocrine rather than the psychoanalytic

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conception of homosexuality. He states as a fact that most of the male homosexuals are uncircumcised. This is exactly in line with what most observers in this field have brought out, namely, that the Jews as a race have few homosexuals. Now, were the psychoanalytic conception of homosexuality correct, this race in particular should be full of homosexuals. The poorer members of this race with their proverbial large families have been living in the poorest and cheapest tenement houses, often a family of eight or more members living in three or four rooms, where it is practically impossible to keep the sexes apart in childhood and even in adolescence. When one considers also that for centuries this race has been cooped in ghettos all over the world, also living in small and inadequate quarters, were the psychoanalytic origin of homosexuality correct, namely, that in some of the cases the condition is due to a child seeing the sex organs of the opposite sex, one would again naturally expect a large amount of hereditary homosexuality in this race and yet the very reverse is the fact.

The author states that the treatment of homosexuality is really so complex that volumes can be suggested, and yet no definite results can be promised. He further states that he does not believe that a reliable prognosis can be given with regard to active homosexuality. This is in line with the observations of other authors who treat the condition on psychoanalytic lines, some of whom have definitely stated that they have never cured a case of homosexuality. In view therefore of their own honest conclusions and statements of fact, one can wonder why the psychoanalyst should persist in his theory when he admits that treatment according to this theory is practically never successful.

The book gives much clear and distinct information about homosexuals in prison life, information which cannot be obtained from any other source.

The Dissection and Study of the Sheep's Brain as an Introduction to the Study of the Human Brain. By James Wilkie, B.Sc., Department of Biology, Guy's Hospital Medical School. Foreword by Professor T. B. Johnston, Guy's Hospital Medical School. Cloth. Price, $2.25. Pp. 95, with 53 illustrations. New York & London: Oxford University Press, 1937.

This little manual will be gratefully received by all students of comparative mammalian neuroanatomy and all medical students who begin their study of the gross anatomy of the brain with the brain of a sheep. The book is clearly and simply written. In fact it at times descends to a juvenile level somewhat beneath that of the students for whom it is intended. The text presents a carelessness with the English language, a colloquialism, not anticipated in a book from this source. For instance, the author uses "pia" for pia mater, "medulla" for medulla oblongata, "cranial" for cranial nerve, "pituitary" for pituitary body, and so on. "In front" and "behind" are used to mean ventral and dorsal as well as cephalad and caudad, at times in the same or neighboring paragraphs and to the confusion of the reader. The illustrations, pen and ink drawings by the author, are very good. Two minor errors are noted in them. In figure 2 the sixth cranial nerve is not identified and in figure 42 "inf. cap" is used where int. cap. is intended.

Pulmonary Tuberculosis in Practice: A Modern Conception. By R. C. Wingfield, B.A., M.B., B.Ch., Medical Superintendent, Brompton Hospital Sanatorium, Frimley. Cloth. Price, $2.50. Pp. 122, with 25 illustrations. Baltimore: William Wood & Company, 1937.

Wingfield divides tuberculosis into its various phases of development from the time the tuberculin test first becomes positive to the advanced stage of the disease. The various steps are illustrated graphically in one large chart. He states that the student in medical school "learns next to nothing about his main tasks, namely, the detection of the disease in its treatable stages and the supervision of his successfully treated cases." As "present-day teaching and present-day textbooks show him the moderately advanced case during its symptom-producing active stage and almost totally ignore the vitally important earlier half of the development of the disease both in its clinical and pathological aspects," the book was prepared to provide a comprehensive and logical picture of the pathogenesis of chronic pulmonary tuberculosis, as well as the methods of treatment appropriate for each stage of the disease. Attention is called to the fact that our knowledge of the partial active immunity produced by the primary infection is, indeed, scanty and that we have no method of measuring such immunity. Under the discussion of diagnosis, emphasis is placed on the fact that the disease in its reinfection form in nearly every case establishes itself without causing symptoms of sufficient gravity to alarm its victim. With reference to the use of the x-rays in diagnosis he says "It is to be hoped the day will come when the x-ray will be as freely used as the clinical thermometer," although he points out that a roentgenogram "simply demonstrates that there is an infiltration of the lung but tells very little as to the character or the cause of the infiltration; it may be nontuberculous." He emphasizes the extreme importance of assembling information from all phases of an examination before arriving at a final diagnosis. Under treatment all procedures are discussed from strict rest in bed through the various forms of collapse therapy. Complications, such as hemorrhage, pleural effusion, spontaneous pneumothorax and tuberculous laryngitis, are given adequate consideration. Throughout the book Wingfield emphasizes the great importance of the general practitioner in the diagnosis, treatment and prevention of the disease. This book is sufficiently comprehensive as to be of value to all physicians engaged in the diagnosis and treatment of tuberculosis.

Involutive und idiopathische Angstdepression in Klinik und Erblichkeit. Von Dozent Dr. K. Leonhard, Oberarzt der Nervenklinik in Frankfurt a. M. Boards. Price, 7 marks. Pp. 116, with one illustration. Leipzig: Georg Thieme, 1937.

The author presents his investigations of the nosologic and hereditary features of forty-two cases of anxiety and agitated psychoses, chiefly depressions, in both men and women. His conception is a modification of the classification of Kraepelin, which separated the involutional melancholias from the manic-depressive cases. Leonhard concludes from a study of his material that there are periodic anxiety and agitated depressions occurring in younger persons, which are "idiopathic" and should not be included among the manic-depressive group. He finds a strong hereditary basis for these psychoses and considers them identical with the more typical involutional agitated depressions, because of their symptomatologic and hereditary similarities. The case material is presented with a brief clinical description of each psychotic episode and a brief description of psychopathic members of the family. The discussion concerns itself exclusively with phenomenologic and hereditary data, completely disregarding the personality, experiential and biographic features and their dynamic implications. The finding of a familial incidence in the affective psychoses is well recognized and throws no real light on their etiology or pathogenesis. It is felt, therefore, that this book has little to recommend itself to the American psychiatrist.

Concepts and Problems of Psychotherapy. By Leland E. Hinsie, M.D., Professor of Clinical Psychiatry, College of Physicians and Surgeons, Columbia University. Cloth. Price, $2.75. Pp. 199. New York: Columbia University Press, 1937.

There has been a need for some time for a comprehensive book that would cover the use of psychotherapy by physicians. Hinsie has attempted somewhat to make such a volume for the use of the individual who is devoting his life to mental treatment. Unfortunately he falls short of his goal. It is quite true that a young psychiatrist beginning his work in this field would be interested in knowing something about the various types of psychotherapeutics which are in use today. He undoubtedly would want more than just a description of procedures and would want an idea of precisely how they are used, by whom they should be used, and, if they are not easily translated from the printed words to action, how they can be learned. Unfortunately, however, all that Hinsie's book contains is a brief summary of the more conventional freudian ideas, supplemented with chapters devoted, first, to Adolph Meyer's psychobiology and, secondly, to the work of Adler and Jung. In none of these chapters is anything new presented. Many of the recent books on psychoanalysis which are written by reputable authorities, such as Kubie's, will give a better picture of this field than has Hinsie. One gets the idea from his description of Adolph Meyer's psychobiology that he does not fully understand what Meyer is driving at and that the principles as enunciated by the doyen of American psychiatrists have

been mastered only in terminology and that their actual application and an understanding of them is not here thoroughly demonstrated by the author. As for Adler and Jung, one would naturally expect to find a tendency to minimize the contributions of these individuals. This, of course, is due to the fact that Hinsie's basic training is primarily along the lines of freudian psychoanalysis. More interesting perhaps than Hinsie's own work is a supplement by Carney Landis showing statistically the way in which treatment is being used in mental hospitals today. This presentation is dramatic, interesting and one that should be taken from its setting in the present volume and presented individually. Hinsie does, however, offer a conclusion which is interesting and encouraging along the lines of the adoption of psychotherapy to active treatment work with mental cases. The book closes with a satisfactory bibliography.

Die Bluttransfusion als Mittel zur therapeutischen Umstimmung. Von Prof. Dr. Rudolf Stahl, leitender Arzt der Inn. Abteilung des Krankenhauses Bethanien, Breslau. Veröffentlicht von der Schlesischen Gesellschaft für vaterländische Cultur. Paper. Pp. 56, with 21 illustrations. Breslau: Ferdinand Hirt, 1937.

This brochure emphasizes the after-effects obtainable from blood transfusion, which are likened to parenteral alterative influence (umstimmunges therapie). Immediately following the transfusion there is a biphasic tendency: phase I with rising temperature, sympatheticotonia, increase in blood calcium, tendency to acidosis and a leukocytosis change in the direction of myeloid character, with increased basal metabolism and blood sugar. The second phase is characterized by the opposite tendencies: falling temperature, vagotonia, increased potassium in blood and alkalosis, lymphocytic increase and diminution in basal metabolism and the sugar content of the blood. This, however, is not the end of the changes, because the author has been able to detect protracted excitation processes which may reach their height between the fifth and fourteenth days after the transfusion and last as long as from three to four weeks. This shows itself especially in a secondary increase in erythrocytes, frequently with the appearance of reticulocytes. There is also an increase in the antibacterial agglutinin titer. He therefore advises blood transfusion not only for restorative purposes in anemia but also for the hemostatic value as well as for the purpose of stimulating the reparative functions of the system. He considers such stimulation particularly valuable in peptic ulcers and in cases of ulcerative colitis that have led through bleeding to secondary anemia, but he considers these of value even in cases in which anemia is not marked. In sepsis suitable blood transfusions may be life saving. He prefers direct transfusion by means of Percy's paraffin cylinders most especially in infectious diseases, but he considers indirect transfusion or transfusion of preserved blood as being worthy of trial. He deplores, however, anything that tends to lessen the glamour that surrounds the transfusion of blood from man to man.

Artificial Fever Produced by Physical Means: Its Development and Application. By Clarence A. Neymann, A.B., M.D., F.R.S.M., Associate Professor of Psychiatry, Northwestern University Medical School, Chicago. Cloth. Price, $6. Pp. 294, with 68 illustrations. Springfield, Illinois, & Baltimore: Charles C. Thomas, 1938.

This is a careful study of the various methods of production of fever therapy by physical means which describes the basic principles, history, physiology and technic of application of fever therapy for various diseases, particularly dementia paralytica, syphilis of the central nervous system, primary and secondary syphilis, multiple sclerosis, chorea minor, arthritis, gonorrhea and asthma. The author seems to lay undue stress on the value of producing fever by means of electromagnetic induction and seems somewhat biased in favor of this method. Nevertheless he does give careful descriptions of other methods of treatment. He is a mite too concerned about his own priority in certain phases of this investigation and a bit too prone to the use of the first personal pronoun. One may be startled by the recommendation that if the patient's temperature becomes too high he should be bathed with ice water. It is generally felt that tepid sponges and fanning of the nude body will produce much more rapid drop in temperature, whereas applications of ice water tend to constrict the peripheral capillaries and prevent the radiation of heat. Aside from these minor criticisms, the book can be recommended highly as a careful, workmanlike, scientific contribution by an author who is justly enthusiastic about the results to be obtained with this fairly new therapeutic procedure. The work is exhaustive, and an excellent bibliography is attached. The book can be recommended to all physicians interested in fever therapy and in the various diseases which are amenable to this procedure.

Dixon's Manual of Human Osteology. Revised by E. B. Jamieson, M.D., Senior Demonstrator and Lecturer on Anatomy, University of Edinburgh. Second edition. Cloth. Price, $7.50. Pp. 465, with 180 illustrations. New York & London: Oxford University Press, 1937.

The first edition of this book was published in 1912 by Prof. A. Francis Dixon of Trinity College. It was written for junior students who began their study of gross anatomy with osteology. The second edition has been rewritten by Dr. E. B. Jamieson of Edinburgh for the same students and with the same purpose. It is half as big again as was the first edition (465 pages as against 301) because Dr. Jamieson has found it advisable to include an account of many of the soft parts associated with the bones. So much material of this kind has been introduced that this edition might well be called an introduction to practical gross anatomy. He has added also an account of the development of bone and devoted more attention to joints and to the movements of joints. The illustrations are for the most part the excellent ones that appeared in Dixon's first edition; Dr. Jamieson has, however, substituted for some of them illustrations taken from Cunningham's Practical Anatomy and has added a few. The account of the development of bone being intended for junior students is a plain statement of the generally accepted views. Controversial opinions are omitted. No mention is made of Policard's views of the function of osteoclasts and osteoblasts. The teleologic idea that structures and processes are adapted in advance to demands which appear very much later is accepted without question. Students who have time to make a special study of bone before beginning dissection of the human body will find this book of great help in carrying on such studies.

Handbuch der experimentellen Pharmakologie. Begründet von A. Heffter. Ergänzungswerk. Herausgegeben von W. Heubner, Professor der Pharmakologie an der Universität Berlin, und J. Schüller, Professor der Pharmakologie an der Universität Köln. Band V: Enthaltend Beiträge von H. Schlossberger, et al. Paper. Price, 39.60 marks. Pp. 307, with 24 illustrations. Berlin: Julius Springer, 1937.

Heffter's handbuch is the most extensive and complete work on pharmacology. Additions to it are indispensable in research libraries. The present volume deals with chaulmoogra oil and its allies by Prof. H. Schlossberger of Berlin, coramin and metrazol by Prof. Fritz Hildebrandt of Giessen, the harmine group of alkaloids by Prof. J. A. Gunn of Oxford, and insulin by Profs. E. M. K. Geiling of Chicago, H. Jensen of Baltimore and G. E. Farrar of Philadelphia. The history, pharmacology and extensive literature of these drugs are given. Chaulmoogra oil has been used in Hindu medicine for a thousand years. One might therefore expect an extensive ancient literature. However, until 1854 its use in leprosy was not generally recognized, and not until 1904 was the attention of the scientific world drawn to it. One hundred and twenty-seven pages are devoted principally to its chemistry and pharmacology. Pyridine-beta-carbonic acid diethylamine (coramin) is a medullary stimulant resembling in action camphor, nicotine and metrazol. Its value in medicine has not been established. The discussion of its pharmacology occupies thirty-two pages. Pentamethylenetetrazol (metrazol) was first prepared in 1924. It is extensively used at present in the treatment of psychosis and is of vital interest. Its action is somewhat similar to that of picrotoxin, a medullary stimulant. Its pharmacology is given in thirty-two pages. Its therapeutic use is not described. The harmine group of alkaloids is described in English. The plant from which these alkaloids are obtained is indigenous to southern Russia, the Balkans and the eastern Mediterranean countries as far as Tibet. Among other actions, it dilates the coronary vessels and has a quinine-like action on the uterus, but no therapeutic use of these actions is suggested. Insulin is also described in English. The discussion is extensive and complete (eighty-three pages). One can do justice to it only by saying that it is perhaps the best mono-

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graph on the subject of insulin. Heffter's handbuch is primarily for research workers. The present volume, however, will be found valuable for clinicians interested in the uses of chaulmoogra oil, metrazol or insulin. Unlike most of the earlier volumes, this one contains both subject and author indexes, which add greatly to its value.

A Method of Anatomy: Descriptive and Deductive. By J. C. Bolleau Grant, M.C., M.B., Ch.B., Professor of Anatomy in the University of Toronto. Cloth. Price, $6. Pp. 650, with 564 illustrations. Baltimore: William Wood & Company, 1937.

This is a short textbook in anatomy, evidently intended for use with dissecting manuals and atlases. The method to which the title refers is one by which the author seeks to give the medical student a less formidable textbook than the books commonly used; the latter are discouragingly large and their arrangement is systematic, that is, by systems—bones, muscles, arteries and nerves; the arrangement of this book is regional. Many attempts to give shorter anatomies to medical students have been made and most have failed. The student found them insufficient either for his own interest or for examinations, and though the standard textbooks were long, they were attractive, logically arranged and beautifully illustrated. So students preferred them, doing their own selecting and possessing a comprehensive work for lifelong reference. But the time devoted to dissection in the medical curriculum is much less than it was thirty years ago and many students would welcome a really good, practical introductory work that would be enough for the first examinations in anatomy. This book is the best of its kind that has appeared. It is probably adequate for medical, that is, clinical, anatomy. The material is presented logically and made somewhat easier to remember by skilfully worded correlations. It is evident that it was written by an experienced, conscientious and successful teacher. It would be of still more service to students if it contained directions for dissection, with lists of structures exposed at each stage. It does not include surface anatomy or the anatomy of the brain. A few mistakes are perhaps inevitable in a first edition, being corrected in later ones; for example, in terms, as rectovesical for recto-uterine on page 143, or of fact, as the statement on page 132 that the longitudinal muscle does not form a complete cover for the large intestine. The illustrations are for the most part original diagrams which the student can advantageously reproduce; he would depend on the excellent atlases now available for more elaborate illustrations.

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Bentley and Driver's Text-Book of Pharmaceutical Chemistry. Revised by John Edmund Driver, Ph.D., M.Sc., F.I.C., Lecturer on Chemistry in the University College of Nottingham. Third edition. Cloth. Price, $7.50. Pp. 624, with 48 illustrations. New York & London: Oxford University Press, 1937.

This is a textbook for students and the arrangement is logical. The inorganic portion follows the periodic system so far as practicable, and the organic portion follows the classification generally accepted by organic chemists. Since this is intended to cover a laboratory course, it would make an excellent laboratory manual. The methods used are, as a rule, chosen for simplicity and economy. The use of a Duboscq colorimeter is not mentioned, but colorimetric determinations are made with perforated blocks of wood containing test tubes of colored substances or by the use of Nessler tubes. Gas analysis is made in Hempel burets. The use of melting point apparatus, pyknometers, viscosimeters, refractometers and polarimeters is described. The colored chart of Clark and Lub's indicators, together with methyl orange, cochineal and litmus, is given. The tests for heavy metals might be applied to biochemistry after the destruction of organic matter. In the detection of organic compounds, usually a number of tests are given (and since most of these are not absolutely specific, the confirmation by a number of different tests is often desirable). The later chapters contain many substances of special physiologic interest and they are treated usually in a theoretic manner without laboratory methods being given for their estimation. It is hardly probable that this book would replace Autenrieth and Warren's Detection of Poisons for the research worker. The most important alkaloidal precipitating agents are not mentioned and no adsorption methods of isolating alkaloids are given.

The Rôle of Chemiotaxis in Bone Growth. By A. P. Beriwistle, M.B., Ch.B., F.R.C.S. Cloth. Price, 8s. 6d. Pp. 59, with 32 illustrations. London: Henry Kimpton, 1937.

The author states that the object of the book is to describe disruptive chemotaxis, indicating the power of certain hard substances to draw into them certain soft lining substances and to lay down a law "that whenever young fibrous tissue, particularly young blood vessels, come into contact with bone or a calcified deposit new bone formation occurs." Bone development is concisely reviewed. It is asserted that in the process of ossification calcium is always laid down first; then young fibrous tissue grows in and forms bone. This is true however only for enchondral ossification, so that the author is faced with the necessity of finding another explanation for intramembranous or fibrous ossification. A discussion of pathologic processes of ossification follows, but it is difficult to see wherein the author contributes anything more than a new phrase in his attempt to shed new light on the biophysical and biochemical processes of ossification.

Atlas of Skeletal Maturation. By T. Wingate Todd, M.B., C.H.B., F.R.C.S., Henry Willson Payne Professor of Anatomy, Western Reserve University, Cleveland, Ohio. With the collaboration of colleagues and assistants, 1926-1936. Cloth. Price, $7.50. Pp. 203, with 75 illustrations. St. Louis: C. V. Mosby Company, 1937.

The author and his collaborators have studied skeletal maturation by means of serial roentgenograms of a large number of selected males and females at frequent intervals throughout the growth period. Standard observations have been set up at three or six months intervals from three months after birth to 16 years in girls and 19 years in boys, at which dates maturity is reached. Forty standard roentgenograms of the hand of the male and thirty-five of the female covering the period of maturation are reproduced and the changes recorded with great precision. Maturation is observed to proceed more rapidly in the female throughout the entire period but more noticeably after the first year. This is a masterly study of skeletal growth and it is to be hoped that the author will publish similar studies which he indicates he has made of the rest of the skeleton.

Voprosy obshchey i chastnoy rentgenologii. Trudy Gosudarstvennogo Ordena Lenina Instituta Usovershenstvovaniya Vrachey im S. M. Kirova, Kafedra rentgenologii, Tom vtoroy. Pod obshchey redaktsiey B. E. Rozina. Otvetstvenny redaktor S. A. Reynberg. [Problems of General and Special Roentgenology. Works of State Order of Lenin Institute for Training of Physicians, named after S. M. Kirov, Department of Roentgenology, Volume II.] Cloth. Price, 15 rubles. Pp. 296, with illustrations. Moscow & Leningrad: Izdatelstvo Akademii Nauk SSSR, 1937.

This, the second volume issued by the chair of roentgenology of the Kirov Postgraduate Institute in Leningrad, is a collection of papers dealing predominantly with problems of experimental character. The subjects investigated are those of experimental vasography, roentgenologic study of the physiology of respiration and the circulation, the study of the diagnosis and the course of the diseases of the gastrointestinal tract, and, in particular, of ulcerative disease, as well as the study of the biologic effects of the roentgen rays. The roentgenologic approach to physiologic problems opens up possibilities heretofore but superficially investigated. The shift from investigations of a purely morphologic character to those of the functional activities of the human organism was made possible thanks to the recent advances in the roentgenologic methods and technic. The papers present much that should be of interest to the scientific roentgenologist. They are well illustrated and supplemented with exhaustive bibliographic references. The appearance of the volume suggests that the Russians are making progress in the art of book publishing.

Fractures and Dislocations for Practitioners. By Edwin O. Geckeler, M.D., F.A.C.S., F.A.A.O.S. Cloth. Price, $4. Pp. 252, with 213 illustrations. Baltimore: William Wood & Company, 1937.

The author's purpose in writing a book on fractures and dislocations for general practitioners was to present the subject in a condensed manner without omission of important details. He desired to have the first physician who attended accident cases acquainted with one good method of treatment for every type of fracture and dislocation. Early correct care prepares the way for good end results. The book fulfils these requirements. One could easily take issue with many statements and therapeutic procedures but the author selected the most prac-

tical methods in order to facilitate the emergency therapy for the general practitioner. There are two parts, one on fractures and the other on dislocations. Every bone and joint fracture and dislocation is presented with a discussion of etiology, examination, complications, prognosis, immediate treatment and follow-up treatment. The manuscript is written in an easily understood manner. The illustrations, photographs and roentgenograms are well selected, clear and adequate.

Index médico-pharmaceutique. Par N. T. Deleanu, professeur à la Faculté de pharmacie de Bucarest, René Fabre, professeur à la Faculté de pharmacie de Paris, et L. Coniver. Avec la collaboration du Prof. M. Tiffeneau, et al. Préface de M. Maxime Radais, membre de l'Académie de médecine. Cloth. Price, 150 francs. Pp. 756. Paris: Masson & Cie, 1937.

This is a collaboration of Rumanian and French pharmacists to present "clearly and precisely" for physicians' and pharmacists' use the important facts regarding drugs and preparations. The main portion of the book is devoted to an alphabetically arranged index giving these facts in tabular form. There are introductory chapters on toxicology, pharmacodynamics and galenic preparations. Chapters on endocrine therapy, vaccines and serums and vitamins and a brief chapter on physical therapy and on narcotics and the laws relating to their dispensing conclude this book.

Miscellany

REGULATIONS GOVERNING ADMISSION TO UNITED STATES NARCOTIC FARM

The Surgeon General of the U. S. Public Health Service has forwarded the following regulations for admission to a U. S. narcotic farm, effective April 1, 1938:

No person shall be eligible for treatment or confinement in a United States narcotic farm unless he is an addict as hereafter defined and then only: (1) if such person has been sentenced to confinement on conviction of an offense against the United States, including convictions by general courts-martial or by consular courts; (2) if such person is completing a sentence of confinement at a narcotic farm and applies in accordance with the requirements of these regulations for further custodial care and treatment beyond the expiration of sentence; (3) if such person is placed on probation by any court of the United States or other federal authority which has imposed as one of the conditions of such probation that he will submit himself for treatment until discharged as cured, or (4) if such person, being not an unconvicted alien, voluntarily signs an application requesting custodial care and treatment in accordance with the requirements of these regulations. On admission to a narcotic farm as provided by these regulations, such four classes of addicts will be designated and hereafter referred to in these regulations as "prisoners," "ex-prisoners," "probationers" and "voluntary patients," respectively; collectively, they will be designated and hereinafter referred to as "addicts," "inmates," "patients" or "beneficiaries."

The term "addict" wherever used in these regulations means any person who habitually uses a habit-forming narcotic drug so as to endanger the public morals, health, safety or welfare or who is or has been so far addicted to the use of habit-forming narcotic drugs as to have lost the power of self control with reference to his addiction.

The terms "habit-forming narcotic drug" or "narcotic" wherever used in these regulations mean opium and coca leaves and the alkaloids derived therefrom, the best known of these alkaloids being morphine, heroin and codeine, obtained from opium, and cocaine derived from the coca plant; all compounds, salts, preparations or other derivatives obtained either from the raw material or from the various alkaloids; Indian hemp and its various derivatives, compounds and preparations, and peyote in its various forms.

A prisoner shall be admitted to a narcotic farm for treatment and confinement therein, on presentation to the medical officer in charge of such farm of a copy of the sentence and/or commitment, or other certificate showing the conviction, sentence of confinement and commitment of the prisoner, accompanied by an order by the authority vested with the power to designate the place of confinement of the prisoner or of the authorized representative of such authority, designating such narcotic farm as the place of confinement and certifying that such convicted person is an addict. Such documents shall be supplemented by the certificate, or a copy thereof, to be executed by the prosecuting officer after conviction and sentence on a farm prescribed by the Surgeon General, stating his belief that the convicted person is an addict, his reasons for such belief, and all pertinent facts bearing on such addiction, together with the nature of the offense.

A prisoner, at the expiration of his sentence at a narcotic farm, may be considered for continued treatment therein as an "ex-prisoner" on submitting application to the Surgeon General on a form prescribed therefor. Such application must contain an agreement to submit to custodial care and treatment for the maximum time estimated by the Surgeon General as necessary to effect a cure or until he ceases to be an addict and be accompanied by a certificate from the medical officer in charge stating that at least one month prior to the expiration of sentence the prisoner has been examined, that he is still an addict, that he may by further treatment in a narcotic farm be cured of his addiction, and estimating the maximum time necessary to accomplish such cure. No prisoner shall be continued for treatment beyond the expiration of his sentence except on receipt of the Surgeon General's written approval of the application, and then only for such period of time as has been estimated as necessary to accomplish a cure.

A probationer shall be admitted to a narcotic farm for treatment on presentation to the medical officer in charge of an authenticated copy of the order entered by any court of the United States or other federal authority having power to suspend the imposition or execution of sentence and place a defendant on probation under any existing law, showing that such convicted person has been placed on probation and that the court or other federal authority has imposed as one of the conditions of such probation that such person shall be admitted and submit himself for treatment at a narcotic farm until discharged therefrom as cured of his addiction; such document shall be supplemented by a certificate executed after conviction by the prosecuting officer or probation officer on a form prescribed by the Surgeon General, such certificate stating the respective officer's belief that the convicted person is an addict, his reasons for such belief and all pertinent facts bearing on such addiction, together with the nature of the offense.

Any addict, except one who is an unconvicted alien, may be considered for admission to a narcotic farm for treatment and confinement therein as a voluntary patient on filing application with the Surgeon General on a prescribed form. Such applicant must agree to submit to custodial care and treatment for the maximum time estimated by the Surgeon General as necessary to effect a cure or until he ceases to be an addict. Unless he is a beneficiary of the United States Public Health Service as provided by law and regulation, such applicant must agree, if so required by the Secretary of the Treasury, to reimburse the government for his subsistence, care and treatment and accompany his application by a recognizance, stipulation, bond or undertaking in form and amount to be approved by the Secretary of the Treasury guaranteeing the cost of his subsistence, care and treatment. Such application must be accompanied also by a medical certificate executed on a prescribed form by a qualified physician designated by the Surgeon General. Such certificate must state whether the applicant is an addict, whether the designated physician believes that the applicant may by treatment in a narcotic farm be cured of his addiction, the estimated time necessary to effect a cure, and any further information bearing on the addiction, habits or character of the applicant that may be pertinent. No such addict may be admitted unless the application is approved by the Surgeon General and unless suitable accommodations are available after all eligible addicts convicted of offenses against the United States have been admitted.

The medical officer in charge shall not admit or accept responsibility for any addict applying or presented for admission to a narcotic farm when in doubt as to the eligibility of such addict or as to the sufficiency of the documentary evi-

dence presented to establish eligibility. In such cases he shall report the salient facts together with any recommendations he may desire to make to the Surgeon General for decision. Persons otherwise eligible may be refused admission when accommodations are not available or when appropriations are insufficient for their transportation, maintenance and care.

The actual and necessary expenses incident to the transfer to a narcotic farm of prisoners or probationers, including the actual and necessary round trip expenses of custodial officers required in the transfer of prisoners, shall be chargeable to the appropriation for the maintenance of such farm when authorized by the Surgeon General. No payment shall be made from such appropriation for any of the expenses of transporting to a narcotic farm ex-prisoners or voluntary patients.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Nonunion of Fragments of Fractured Tibia in Rachitic Child.—The plaintiff, when 21 months old, fell out of her high chair one night, fracturing her left tibia. The defendant saw her that night but made no effort to reduce the fracture until the following morning, when the child was taken to a hospital, the fracture reduced and a cast applied. About five weeks later the cast was removed but the child refused to walk and a new cast was applied. For months this process of applying and removing casts continued, the child refusing to walk each time a cast was removed. Finally an operation was performed, the ends of the fragments were scraped and a beef bone peg inserted. This treatment did not produce a union and the beef bone peg slipped down into the medullary canal of the lower portion of the bone. The defendant again operated, removed the peg, rescraped the ends of the fragments and sutured them together. This did not produce a union. The child was then taken by her parents to a clinic, where a homogenous graft was attempted but without success. A suit for malpractice was then instituted in the child's behalf by her father against the defendant. Judgment was rendered for the plaintiff, and the defendant appealed to the Supreme Court of Oklahoma, contending mainly that there was a total absence of competent medical testimony to show that the failure of the child's leg to heal was due to a lack of care or skill in his diagnosis and treatment.

There was evidence that the child had rickets, to which fact the defendant attributed the failure of his efforts to obtain a union of the fragments. The defendant was supported in the correctness of his diagnosis, in the propriety of the treatment he rendered and in his contention that the permanent nonunion resulted from the congenital condition of the bones and the presence of rickets by the positive testimony of ten other physicians. The only medical testimony apparently presented in behalf of the child was the deposition of two physicians, based on an examination not of the child but of roentgenograms taken of the fracture. The defendant contended that the testimony of these physicians did not conflict with the testimony of his expert witnesses. The court, however, pointed out that the plaintiff's witnesses criticized the defendant for not reducing the fracture immediately on the night of the injury, for not having roentgenograms taken with more frequency, whereby he might have studied the alinement, the apposition, the formation of callus, and other details of healing, and for failure to have an analysis of the blood made by which constitutional deficiencies might have been determined accurately and treated. They criticized, too, the cast applied and they condemned the insertion of the peg in view of its size, saying that it was bound to act as a foreign body and to irritate and to interfere with the functions of the medullary canal. They denied that the roentgenograms indicated any constitutional causes for the failure of the fragments to unite and contended that there was evidence of vitality in the bones at all times. One of them on cross examination stated that a roentgenogram indicated that nonunion was due to lack of apposition and to irritation by a foreign body and to irritation caused by the ends of the fragments rubbing, as the result of the lack of fixation and apposition.

The Supreme Court was of the opinion that the plaintiff's testimony was of sufficient probative value to support a finding that the defendant did not diagnose and treat the child in keeping with the medical standards of the community and that the failure to obtain a union of the fractured bone was the result thereof rather than of any deficiency in the child's physical self. The judgment in favor of the child was accordingly affirmed. Two justices of the court filed a dissenting opinion.—*White v. Burton (Okla.), 71 P. (2d) 694.*

Zoning Ordinances: Practice of Medicine Not a Trade or Industry.—A licensed physician was arrested pursuant to an affidavit which charged that on a stated day and at a certain address he violated the zoning ordinance of the city of Miami Beach, Fla., by "operating the profession of physician." He petitioned for and procured a writ of habeas corpus and was discharged from custody. The defendant in the habeas corpus proceeding, the chief of police of the city of Miami Beach, then appealed to the Supreme Court of Florida.

The zoning ordinance in question, said the Supreme Court, was entitled "An Ordinance to Regulate and restrict the Erection, Reconstruction, Alteration, Location and Use of Buildings, structures, land and water, for trade, industry, residence or other purposes." Section 2 of the ordinance, in dividing the city into certain area districts and restricting the use of land in some of these districts, provided:

> In order to regulate and restrict the location of trades and industries and the location of buildings erected, constructed, reconstructed or structurally altered for specific uses, and to regulate the size of buildings and other structures hereafter erected or altered, to regulate and determine the size and dimensions of yards, courts and other open spaces and to regulate and limit the percentage of lot that may be occupied and the density of population, the City of Miami Beach Florida is hereby divided into use and area districts as follows.

The affidavit under which the physician was arrested charged that he violated the ordinance by "operating the profession of physician" at a stated address. But, said the court, engaging in the practice of medicine or, as was charged in the affidavit, "operating the profession of physician," is neither conducting a trade nor engaging in an industry. The ordinance, therefore, does not apply to the practice of medicine. If the affidavit should be held to charge an offense under the ordinance, then every physician who visited a patient outside the business district of and within the city of Miami Beach would necessarily be deemed to be doing so in violation of the ordinance.

The court accordingly affirmed the order of the lower court discharging the physician from custody.—*Yocum, Chief of Police, v. Feld (Fla.), 176 So. 753.*

Privileged Communications: When Patient Waives Privilege by Testifying.—The plaintiff suffered certain injuries which he attributed to the negligence of the defendant. During the course of a suit for damages that ensued, the defendant sought to introduce the testimony of a physician who had treated the plaintiff prior to the accident. The trial court excluded this testimony, the intermediate appellate court reversed that ruling, and the plaintiff appealed to the Supreme Court of Ohio.

In Ohio a physician generally may not testify "concerning a communication made to him by his patient in that relation, or his advice to his patient." Such testimony is admissible by express consent of the patient or if the patient "voluntarily testifies, the . . . physician may be compelled to testify on the same subject." In the present case there was no claim that express consent was given by the plaintiff for the physician to testify. The plaintiff did testify in his own behalf. On direct examination he made no reference to the physician but did state that he had been in good health prior to the accident. On cross examination he admitted that he had consulted the physician but did not testify as to the ailment for which the physician treated him. But, said the court, this testimony on cross examination was not "voluntary" within the meaning of the statute. The plaintiff was obliged to answer the questions

whether he desired to or not. He had no choice about the matter and by so testifying he did not waive the privilege.

The defendant further contended that, when the plaintiff in his direct examination, which was voluntary, testified that his health before the time of the accident was good, he therefore testified on a "subject" under the statute in such a manner as to permit the defendant to introduce testimony respecting his health during that period, including the communications, advice and treatment of plaintiff by the physician who was offered as a witness. When the plaintiff so testified, the defendant contended, he thereby "opened the door" and waived the privilege accorded him by the statute. While, said the court, there is much force in such an argument, such an interpretation would render the statute useless and ineffective in every case in which the plaintiff or patient has testified generally respecting his health. One weakness of such an argument, the court pointed out, was illustrated by the manner in which counsel for the defendant in the beginning of his brief stated the question at issue. He said: "The only question in this case for the consideration of the court is: 'If the plaintiff in a personal injury suit voluntarily testifies generally as to his good physical condition at the time of the accident and prior thereto, can he, through his attorney, claim that the testimony of a physician who treated him for an ailment, *not loathsome*, for a period of six months or more before the accident, is privileged, . . .'" (italics supplied by the court). But, the court remarked, the statute makes no such distinction between an ailment which is loathsome and one not so. The statute is not concerned with any particular kind of ailment, whether loathsome or otherwise, but rather with the confidential relationship between physician and patient. What the patient has said to his physician and what the physician has said to the patient is closed to the outside world unless the patient first voluntarily testifies in respect thereto or gives express consent to its revealment.

The judgment of the intermediate appellate court was therefore reversed and that of the trial court affirmed.—*Harpman v. Devine (Ohio), 10 N. E. (2d) 776.*

Hospitals for Profit: Liability of Owner of Hospital for Negligence of Hospital Nurses.—One of the defendants, a physician, owned and operated a hospital for profit. He assisted at an operation on the plaintiff, in the hospital, by another physician. Alleging that while in the operating room she had been burned by hot water bottles and that her burns had not been properly treated, she sued the physician owner of the hospital and one of the nurses who had helped to care for her, but not the physician who had performed the operation. A general demurrer interposed by the physician defendant was sustained by the trial court, and the plaintiff appealed to the Supreme Court of Idaho.

In her complaint, the plaintiff alleged, among other things, that the nurses applied the hot water bottles without instruction from or knowledge of the operating physician; that at the operation the nurses were not servants or under the control of the operating physician but were under the exclusive control and direction of the defendant physician; and that after her removal from the operation room, although the defendant physician and the nurses knew of the burns, they "did not administer to them in any manner." The demurrer to the complaint was sustained on the theory that the negligence, if any, was the nurses', who, though general servants of the defendant physician, as owner of the hospital, were during the time of the operation as a matter of law loaned to and became the servants of the operating physician. Hence, it was contended, no relationship of master and servant then existed between the defendant physician and the nurses so as to render him liable for their negligence. In the opinion of the Supreme Court, however, the trial court erred in sustaining the demurrer. In the first place, the complaint charged negligence on the part of the defendant physician and the nurses in failing to treat the burns after the patient was taken from the operating room. A hospital conducted for profit is liable for the negligence of its employees in the care rendered a patient subsequent to an operation. In the second place, the complaint alleged specifically that during the operation the nurses were not servants of or under the control of the operating physician but of the defendant physician, and the court knew of no authority for holding that such a relation could not as a special circumstance legally exist.

The complaint, in the opinion of the court, stated a cause of action against the defendant physician, and the demurrer should have been overruled. The trial court, therefore, was directed to overrule the demurrer and to entertain further appropriate proceedings.—*Corey v. Beck (Idaho), 72 P. (2d) 856.*

Autopsy: Liability for Unauthorized Autopsy.—A widow, said the Supreme Court of Kansas, is entitled to receive, for the purpose of burial, the body of her husband in the same condition in which the breath of life left it. An autopsy performed on the body without her consent, unless by direction of or by the coroner when death has occurred under circumstances giving him jurisdiction, is a violation of that right for which she may maintain an action for damages against the physician performing it and a person assisting him in so doing. The fact that the unauthorized autopsy caused her mental pain and suffering only but did not cause her any physical injury will not defeat her right to recover damages.—*Alderman v. Ford (Kan.), 72 P. (2d) 981.*

Society Proceedings

COMING MEETINGS

American Medical Association, San Francisco, June 13-17. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.

American Academy of Pediatrics, Del Monte, Calif., June 9-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Academy of Tuberculosis Physicians, San Francisco, June 17-18. Dr. Arnold Minnig, 638 Metropolitan Bldg., Denver, Secretary.

American Association of Industrial Physicians and Surgeons, Chicago, June 6-9. Dr. Volney S. Cheney, Armour and Company, Union Stock Yards, Chicago, Secretary.

American Association of Medical Milk Commissions, San Francisco, June 13-14. Dr. Paul B. Cassidy, 2037 Pine St., Philadelphia, Secretary.

American Dermatological Association, Del Monte, Calif., June 9-11. Dr. Fred D. Weidman, 36 Hamilton Walk, Philadelphia, Secretary.

American Gynecological Society, Asheville, N. C., May 30-June 1. Dr. Richard W. Telinde, 11 East Chase St., Baltimore, Secretary.

American Heart Association, San Francisco, June 10-11. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.

American Medical Women's Association, San Francisco, June 12-14. Dr. Helen A. Cary, 1634 N.E. Halsey St., Portland, Ore., Secretary.

American Ophthalmological Society, San Francisco, June 9-11. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.

American Pediatric Society, Bolton Landing, N. Y., June 9-11. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.

American Proctologic Society, San Francisco, June 11-13. Dr. Curtice Rosser, 710 Medical Arts Bldg., Dallas, Texas, Secretary.

American Psychiatric Association, San Francisco, June 6-10. Dr. W. C. Sandy, State Education Bldg., Harrisburg, Pa., Secretary.

American Radium Society, San Francisco, June 13-14. Dr. F. W. O'Brien, 465 Beacon St., Boston, Secretary.

American Rheumatism Association, San Francisco, June 13. Dr. Loring T. Swaim, 372 Marlborough St., Boston, Secretary.

American Society of Clinical Pathologists, San Francisco, June 9-11. Dr. A. S. Giordano, 331 North Main St., South Bend, Ind., Secretary.

American Urological Association, Quebec, Canada, June 27-30. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Association for the Study of Allergy, San Francisco, June 9-10. Dr. J. Harvey Black, 1405 Medical Arts Bldg., Dallas, Texas, Secretary.

Association for the Study of Internal Secretions, San Francisco, June 13-14. Dr. E. Kost Shelton, 921 Westwood Blvd., Los Angeles, Secretary.

Connecticut State Medical Society, Groton, June 1-2. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

Hawaii Territorial Medical Association, Honolulu, May 20-22. Dr. Douglas B. Bell, Dillingham Bldg., Honolulu, Secretary.

Maine Medical Association, Bar Harbor, June 26-28. Dr. F. R. Carter, 22 Arsenal St., Portland, Secretary.

Massachusetts Medical Society, Boston, May 31-June 2. Dr. Alexander S. Begg, 8 The Fenway, Boston, Secretary.

Medical Library Association, Boston, June 28-30. Miss Janet Doe, 2 East 103d St., New York, Secretary.

Minnesota State Medical Association, Duluth, June 29-July 1. Dr. E. A. Meyerding, 11 West Summit Ave., St. Paul, Secretary.

National Tuberculosis Association, Los Angeles, June 20-23. Dr. Charles J. Hatfield, 7th and Lombard Sts., Philadelphia, Secretary.

New Mexico Medical Society, Santa Fe, June 6-8. Dr. L. B. Cohenour, 219 West Central Ave., Albuquerque, Secretary.

Rhode Island Medical Society, Providence, June 1-2. Dr. Guy W. Wells, 124 Waterman St., Providence, Secretary.

Society of Surgeons of New Jersey, Hackensack, May 25. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

West Virginia State Medical Association, White Sulphur Springs, July 11-13. Mr. Joe W. Savage, Public Library Building, Charleston, Executive Secretary.

Western Branch of American Public Health Association, Portland, Ore., June 6-8. Dr. William P. Shepard, 600 Stockton St., San Francisco, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

55: 455-666 (March) 1938

Basal Metabolism Standards for Children. F. B. Talbot, Boston.—p. 455.

*Retardation of Growth in Diabetic Children. J. D. Boyd and A. H. Kantrow, Iowa City.—p. 460.

Bacteriology of Blood in Rheumatic Fever. C. J. Leslie and Martha J. Spence, New York.—p. 472.

Diet in Treatment of Diabetes Mellitus in Children. W. E. Nelson and Dorothy Ward, Cincinnati.—p. 487.

Acute Encephalomyelitis Following German Measles. C. Davison and L. Friedfeld, New York.—p. 496.

Acute Appendicitis in Children. W. J. Potts, Oak Park, Ill.—p. 511.

Acute Cholecystitis Complicating Scarlet Fever: Report of Two Cases and Review of Literature. Ann T. Swing and J. G. M. Bullowa, New York.—p. 521.

Use of Percomorph Liver Oil as an Antirachitic Agent. R. L. Roddy, Elizabeth Kirk Rose, P. J. Hodes and J. C. Gittings, Philadelphia.—p. 526.

Relation of Creatinine-Height Coefficient to Various Indexes of Nutrition. Amy L. Daniels, Mary K. Hutton and Berniece Neil, Iowa City.—p. 532.

Vitamin B_1 Intake of Nursery School Children. Elda Robb, Ella M. Vahlteich and Mary S. Rose, New York.—p. 544.

Hospital Infections: I. Survey of the Problem. C. F. McKhann, Boston; A. Steeger, Santiago, Chile, and A. P. Long, Boston.—p. 579.

Retardation of Growth in Diabetic Children.—Boyd and Kantrow present data on 167 children with diabetes mellitus observed at the department of pediatrics prior to January 1935; physical retardation was noted in 6 per cent of the group (ten children), whose stature or rate of growth over long periods was markedly lower than the standard values used for comparison. The norms chosen as standards were those compiled by the Iowa Child Welfare Research Station. They find that, if diabetes mellitus in children is suitably controlled through adequate diet and through avoidance of frequent or continuous glycosuria, retardation of growth will be prevented or corrected. Physical retardation should be considered a result of nutritional or allied metabolic inadequacies rather than a consequence of endocrine disturbances unless prolonged observance of an ample dietary regimen has failed to maintain a normal rate of growth.

American Journal of Hygiene, Baltimore

27: 221-492 (March) 1938. Partial Index

Survey of Intestinal Protozoa and Effect of Aldarsone on Giardia and Other Intestinal Protozoa of Man. Veronica Armaghan and G. C. Mediary.—p. 250.

Incidence and Distribution of Ascaris Lumbricoides, Trichocephalus Trichiura, Hymenolepis Nana, Enterobius Vermicularis and Hymenolepis Diminuta in Seventy Counties in North Carolina. A. E. Keller, W. S. Leathers and J. C. Knox, Nashville, Tenn.—p. 258.

Cattle as Reservoir Hosts of Schistosoma Japonicum in China. K. Wu, Shanghai, China.—p. 290.

Test of Theory on Origin of Bacteriophage. R. W. Glaser, Princeton, N. J.—p. 311.

Blood Platelets in Hookworm Anemia. J. W. Landsberg, Baltimore.—p. 316.

Mosquito Transmission of Avian Malaria Parasites (Plasmodium Circumflexum and Plasmodium Cathemerium). C. M. Herman, Baltimore.—p. 345.

Transitory Immunity to Yellow Fever in Offspring of Immune Human and Monkey Mothers. F. L. Soper, Rio de Janeiro, Brazil, South America; H. Beeuwkes, Stamford, Conn.; N. C. Davis, and J. A. Kerr, Rio de Janeiro, Brazil, South America.—p. 351.

Further Studies on Intestinal Emphysema of Swine. D. F. Eveleth and H. E. Biester, Ames, Iowa.—p. 364.

Complete, Revised Technic of Actinic Sunshine Analysis, with Modifications for Freezing Weather and Near Meridian Exposures. F. O. Tonney, Chicago, and P. F. Somers.—p. 370.

Study of Therapeutics and Prophylaxis of Malaria by Synthetic Drugs as Compared with Quinine. Malaria Commission of the League of Nations Health Organization.—p. 390.

Culicoides of Siam with Descriptions of New Species. O. R. Causey, Baltimore.—p. 399.

Forced Calcification with Parathormone in Experimental Trichina (Trichinella Spiralis) Infections. T. v. Brand, G. F. Otto and Evelyn Abrams, Baltimore.—p. 461.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

39: 321-496 (March) 1938

*Roentgen Visualization and Diagnosis of Breast Lesions by Means of Contrast Mediums. N. F. Hicken, R. R. Best, H. B. Hunt and T. T. Harris, Omaha.—p. 321.

Plasma Cell Myeloma: Report of Two Cases with Unusual Survivals of Six and Ten Years. R. E. Gross and W. W. Vaughan, Boston.—p. 344.

Roentgen Studies of Pathologic Physiology of Bronchial Asthma. L. G. Rigler and R. Koucky, Minneapolis.—p. 353.

Expiratory Roentgenograms for Pulmonary Apical Detail. D. Salkin, Hopemont, W. Va.—p. 363.

Roentgenoscopic Localization of Tuberculous Lesions of Lung for Best Roentgenographic Reproduction. H. H. Cherry, Paterson, N. J.—p. 368.

Magnesium Tetraiodophenolphthalein in Oral Cholecystography. T. O. Menees and H. C. Robinson, Grand Rapids, Mich.—p. 373.

Calculi in Seminal Vesicles: Report of Case. N. J. Heckel, Chicago.—p. 377.

Rhythmic Cyclic Alternating Activity of Kidneys and Rhythm of Other Organs in General. M. J. S. Pillai, Madras, India.—p. 379.

Radiologic Education in England. A. E. Barclay, Oxford, England.—p. 381.

*Pleuropulmonitis Following Irradiation. I. I. Kaplan and Dorothy Bell, New York.—p. 387.

*Radiation Treatment of Herpes Simplex. W. C. Hall, Philadelphia.—p. 393.

Some Observations on Carcinoma of the Breast. E. P. Pendergrass and P. J. Hodes, Philadelphia.—p. 397.

Surgery and Irradiation in Treatment of Cancer of the Breast. J. G. Spackman and J. F. Hynes, Wilmington, Del.—p. 407.

Rationale of Artificial Menopause in Carcinoma of the Breast. G. W. Taylor, Boston.—p. 419.

Radiation Treatment of Carcinoma of Lung. I. Levin, New York.—p. 427.

Depth Effects in Roentgenograms. A. B. Meservey, Hanover, N. H.—p. 439.

Enteric Coatings: Clinical Investigations. A. W. Crane and M. Wruble, Kalamazoo, Mich.—p. 450.

Roentgen Visualization of Breast Lesions.—In diagnosing the types of mammary neoplasms roentgenologically, Hicken and his colleagues use one of two methods. The first is to inject the milk ducts with some radiopaque substance (stabilized thorium dioxide sol) and then make stereoscopic studies. The resulting "mammograms" present accurate anatomic patterns of the injected ducts. Any pathologic condition which alters their size, shape or conformation is readily detected. In the second procedure, termed "aeromammography," carbon dioxide is injected into the retromammary and premammary spaces in such a manner that the diffusing gas forms a contrast capsule around the parenchymal tissue and reveals any neoplasms that may be present. Contrast mammographic studies should be used when the simple roentgenograms are not informative, as they graphically portray the refined differentiation of anatomic relations and pathologic processes. Mammography encourages a patient to seek advice, for tumors can be correctly diagnosed without operation. Unnecessary mastectomies are avoided and mutilating radical procedures are not employed in hopeless cases. Complications are rare. During the last twenty-six months the authors have performed a total of 625 mammograms on virginal, lactating, involuting and diseased mammary glands. Within the early period of this study, three breast abscesses developed following the use of colloidal thorium dioxide. In two other instances the ducts were submitted to too much pressure and the smaller lacteals ruptured, permitting the compound to seep into the matrix structures, but only a mild nonsuppurative inflammation resulted. Refinement of technic and increased experience have eliminated these difficulties. Acute mastitis contraindicates all forms of visualizing studies as the manipulation activates the infective process. Such neoplasms as lipoma, fibroma, papilloma, cysts, galactoceles and carcinoma have been visualized and diagnosed by the two methods.

Pleuropulmonitis Following Irradiation.—Because of contradictory statements regarding the development of pleuropulmonitis following irradiation, Kaplan and Bell undertook a special study of the effects of intensive irradiation in seven selected cases treated over a period of from two months to two years. Roentgenograms in these cases were studied before, during and after treatment. Direct irradiation through the lung in the treatment of cancer of the breast is not advisable. That is why their method of roentgen therapy is limited to the tangential technic. All the patients were women with definite malignant lesions of the breast. High voltage roentgen therapy was employed exclusively, with additional irradiation in two cases by either the large radium pack or interstitial implantation

of radium needles. From their study they conclude that pleuropulmonitis, as described by others, occurs when cancer of the breast is treated by intensive irradiation with the rays passing through the lungs and may well be due to the technic employed or to a concomitant infection. Perhaps the explanation for postirradiation fibrosis in this anatomic site is identical with that in other sites. The pelvis, abdominal cavity or any parenchymal organ may be irradiated with no alteration in the absence of pathologic manifestations, but, when a concomitant infection is present, fibrosis ensues. Following the use of direct intensive irradiation of the breast, no pleuropulmonitis has occurred in any of the cases treated by the authors. In the treatment of the seven specifically selected cases they utilized varying factors of intensity and quality of radiation and direction of the radiation. With high voltage roentgen rays the depth dose is great, but the direction of the ray is tangential and perhaps that factor obviates pathologic changes in the tissue of the lungs. With the 5 Gm. radium bomb the depth dose is smaller, but because of the size of the field the beam is always directed into the lung. The intensities vary with x-rays and radium. Intensive irradiation when directed tangentially to the wall of the chest for carcinoma of the breast does not damage normal lung tissue.

Radiation Treatment of Herpes Simplex.—Hall treated fifteen patients for herpes simplex by irradiation. All the patients treated had herpes labialis. Several of them had more than one lesion at various times. In one patient the herpetic lesions appeared each month with menstruation, but in most of them no obvious cause for the eruptions could be found. The treatment factors used have been 130 kilovolts, 5 milliamperes, tube target distance 30 cm., without filtration. In more than half of the cases 375 roentgens with these factors has been administered in a single dose. This produced definite improvement. In several cases as little as 125 roentgens was used, but the results tended to show that most often this dose was too small. A liberal amount of normal skin was included on all sides of the area treated. The earlier the lesion is treated the better the result. Even in lesions forty-eight hours old the treatments tended to hasten the drying up of vesicles and to shorten the course of the affliction. In early cases it was not unusual for the tingling sensation to disappear within three hours and for the inflammatory reaction to be gone within from six to eight hours.

American Journal of Surgery, New York

40: 1-320 (April) 1938. Partial Index

Nutritional Disturbances Associated with Diseases of Stomach and Duodenum. W. G. Maddock, Ann Arbor, Mich.—p. 12.
Total Gastrectomy for Carcinoma of Stomach. A. W. Allen, Boston.—p. 35.
Malignancy in Chronic Gastric Ulcer. W. J. M. Scott and G. B. Mider, Rochester, N. Y.—p. 42.
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*Gastrojejunocolic Fistula. C. S. Rife, Ann Arbor, Mich.—p. 73.
Primary Carcinoma of Duodenum: Report of Eleven Cases. C. I. Allen, Detroit.—p. 89.
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Chronic Obstruction and Dilatation of Duodenum. J. L. McGehee, Memphis, Tenn.—p. 140.
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Consideration of Faint Gallbladder Shadows in Intravenous Cholecystography. W. G. Scott and S. Moore, St. Louis.—p. 157.
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Early Surgical Treatment of Acute Cholecystitis. F. Glenn, New York.—p. 186.
Treatment of Acute Cholecystitis. M. K. Smith, New York.—p. 192.
*Acute Gangrenous Cholecystitis and Use of Partial Cholecystectomy in Its Treatment. W. L. Estes Jr., Bethlehem, Pa.—p. 197.
Critical Evaluation of Cholangiography. C. G. Mixter and L. Hermanson, Boston.—p. 223.
Acute Pancreatitis, with Especial Reference to Pathogenesis and Diagnostic Value of Blood Amylase Test. W. H. Cole, Chicago.—p. 245.
Surgical Treatment of Carcinoma of Ampullary Region and Head of the Pancreas. A. O. Whipple, New York.—p. 260.
Carcinoma of Pancreas and Extrahepatic Bile Ducts. H. K. Ransom, Ann Arbor, Mich.—p. 264.

Gastrojejunocolic Fistula.—Rife states that fourteen cases of gastrojejunocolic fistula have been seen at the University Hospital in ten years. Thirteen cases were the result of posterior gastroenterostomy done for duodenal ulcer. One was due to erosion by carcinoma of the stomach which involved a large segment of the transverse colon. The average age of the patients was 46 years. The interval between gastroenterostomy and definite symptoms of fistula varied from six months to eleven years, with an average interval of about four and one-half years. Operation was performed in ten of the thirteen cases resulting from ulcer, and two of the patients died. One patient died from peritonitis on the fourteenth day after excision of the fistula, closure of the colon and resection of the lower half of the stomach and a segment of the jejunum at the site of the fistula. The other death resulted from an abscess of the lung eighteen days after closure of the fistula and Finney pyloroplasty. Of the eight patients who survived operation, one died of acute lymphatic leukemia four and a half years after operation but had had no symptoms of recurrence prior to death. Two patients showed symptoms of reactivated duodenal ulcer, one four months and one six years after operation. In one case, in which a new anastomosis had been made, a new jejunal ulcer developed 3½ inches distal to the stoma; this was treated by resection of the jejunum, leaving the patient practically asymptomatic three years later. Of the three patients not operated on, one because of his age and absence of distressing symptoms was treated conservatively. He lived about four years after symptoms of fistula developed. Two patients refused operation. One died three weeks after leaving the hospital; the other has not been heard from since. The excision or the simple closure of the fistula, undoing of the old gastroenterostomy and reconstruction of the gastrointestinal tract to its normal state constitute the operation that has been used to the best advantage in the majority of the cases. In all cases in which operation is planned, a careful preoperative regimen designed to restore the body chemistry to as near normal as possible is imperative.

Gangrenous Cholecystitis and Partial Cholecystectomy.—Estes classifies seventy-eight consecutive cases of acute cholecystitis, all verified at operation, as five acute nonsuppurative, thirty-nine acute suppurative without demonstrable gangrene and thirty-four gangrenous. Of the gangrenous group, twenty-four showed stones impacted in the cystic duct and ten gave a positive culture from the gallbladder bile of either the colon bacillus (nine) or Staphylococcus albus (one). There were nine cases of perforation, seven with localized pericholecystic abscesses and two with acute general peritonitis. The only indication for immediate or emergency operation is the presence of symptoms of perforation with a spreading peritonitis. If gangrene is suspected, early operation must be definitely considered. Evidence of spreading or increasing suppuration or failure of some amelioration of the symptoms is an indication for prompt surgical intervention. The gallbladder should be removed whenever possible. Cholecystectomy from above downward will be found to be technically easier in these hugely distended, thick gallbladders. When the inflammation and induration extend to the area of the common duct, a partial cholecystectomy has proved exceedingly valuable. In the bad risk patient, cholecystostomy may be the only operation with a proper factor of safety. In the presence of jaundice and obvious involvement of the common duct, cholecystostomy should be considered the first part of a two-stage procedure, the second being a cholecystectomy with exploration of the common duct.

Anatomical Record, Philadelphia

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Golgi Apparatus in Proximal and Distal Tubule Cells of Perfused Frog's Kidney. V. M. Emmel, Providence, R. I.—p. 371.
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Hyperplasia and Hypertrophy of Uterine Musculature in Ovariectomized Rats Following Estrone Injections. O. L. Barks and M. D. Overholser, Columbia, Mo.—p. 401.
Review of the Golgi Apparatus. H. Kirkman, Palo Alto, Calif., and Aura E. Severinghaus, New York.—p. 413.
Effect of Male Hormone Substances on Birth and Prenatal Development in the Rat. J. B. Hamilton and J. M. Wolfe, Albany, N. Y.—p. 433.
Studies on Cardiac Muscle Cells, from Chick Embryos, Grown in Tissue Culture. G. S. de Rényi and Mary Jane Hogue, Philadelphia.—p. 441.
Topography of Hypophysis in Xenarthra. G. B. Wislocki, Boston.—p. 451.
Cytologic Study of Fatigued Muscle. E. Adelhelm, Denver.—p. 473.
Development of Crypts in the Human Palatine Tonsil. W. L. Minear, Chicago.—p. 483.

Annals of Otol., Rhinol. and Laryngology, St. Louis

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Suppuration in Petrous Pyramid. J. R. Lindsay, Chicago.—p. 3.
Width of Basilar Membrane in Man. E. G. Wever, Princeton, N. J.—p. 37.
Deep Infections of Neck. H. B. Orten, Newark, N. J.—p. 48.
Ménière's Disease as an Indicator of Disturbances in the Water Metabolism, Capillary Function and Body Condition. S. H. Mygind and Dida Dederding, Copenhagen, Denmark.—p. 55.
Peripheral Endings of Cochlear Nerve. W. P. Covell, San Francisco.—p. 63.
Inner Ear from an Experimental and Clinical Standpoint. W. Hughson, Abington, Pa.—p. 68.
*Lateral Sinus Thrombosis: Study of Eighty-Eight Cases, with Ten of Venous Thrombosis, Found at 12,500 Consecutive Necropsies. C. W. Irish, Los Angeles.—p. 78.
The Management and Treatment of Otogenic Meningitis. S. J. Kopetzky, New York.—p. 117.
Review of 303 Cases of Cholesteatoma. E. M. Holmes, Boston.—p. 135.
Problems in Diagnosis and Treatment of Hyperplastic Sinusitis and Allergy. E. R. Faulkner, New York.—p. 144.
A Masker for Bone Conduction Tests. J. H. Hulka, Long Island City, N. Y.—p. 153.
Experiments on Conduction of Sound in the Ear. H. G. Kobrak, Chicago.—p. 166.
Clinical Availability of Ostium Maxillare: Clinical and Cadaver Study. H. C. Rosenberger, Cleveland.—p. 176.
Contour Reconstruction After External Frontal Sinus Operation. G. B. O'Connor, San Francisco.—p. 183.
Otomycosis: Some Remarks Concerning Its Prevalence, Symptomatology and Treatment. W. D. Gill, San Antonio, Texas.—p. 189.
Comparative Anatomy of the Tongue. G. McGregor, Toronto.—p. 196.
Is the Hearing Aid the Problem of the Otologist or the Layman? M. S. Exner, Philadelphia.—p. 212.
*Blood Cell Response to Sulfanilamide Therapy. J. A. Bigler, Chicago.—p. 219.
New Operation for Correction of External Deviations of Lower End of the Nose. J. A. Tamerin, New York.—p. 235.
Roentgenogram as an Aid in Diagnosis of Surgical Mastoiditis: Comparison of Operative and Roentgen Findings in 100 Cases of Mastoiditis. D. H. Brownell and I. J. Hauser, Ann Arbor, Mich.—p. 240.

Lateral Sinus Thrombosis.—Irish reports on a study of 1,000 cases of cerebral vascular lesions found in 12,500 consecutive necropsies done at Los Angeles General Hospital. Of this number 133 were found to harbor cerebral embolic lesions, 418 hemorrhagic processes and 449 thrombotic pathologic conditions, among which ninety-eight (9.8 per cent) were sinus and venous thromboses. These ninety-eight cases of cerebral venous system involvement have been reviewed with an exposition of the comparative incidence of the various types of lesions, of the contributory factors and etiologic sources in their production and of the sex, age and survival periods in the patients demonstrating these intracranial pathologic changes. Lateral sinus thrombus was found present in thirty-eight cases, the sinus on the left being involved in twenty-five, on the right side in ten and bilaterally in three. The longitudinal sinus was involved in sixteen cases and the cavernous and its accessory sinuses in thirty-four; venous thromboses were disclosed in ten. The history of the development of knowledge regarding these conditions is reviewed with particular attention to diagnostic procedures, the sources and pathways of infection and the opinions regarding the surgical treatment. Bacteriologically the streptococcus is the causative agent of sinus thrombosis in 60 per cent of the cases, according to Seydell. Streptococcus mucosus is especially virulent and characterized by late exacerbations with fatal outcome. In chronic cases anaerobes and facultative anaerobes may be the causative organisms. In the majority of sinus thromboses the infection is from one organism.

Blood Cell Response to Sulfanilamide Therapy.—To determine the leukocyte response in patients receiving sulfanilamide, Bigler made daily blood counts and Schilling differential counts about the same hour of the day before, during and after sulfanilamide therapy in thirty-three cases. A dose of 15 grains (1 Gm.) of the drug to 20 pounds (9 Kg.) of body weight was closely adhered to. Patients with various types of infections as well as those with no apparent infection were included in the study. Of the thirty-three patients, twenty-seven had a leukocytosis and six had a leukocyte count within normal limits when sulfanilamide therapy was started. Not including the six patients to whom the drug was not administered until the infection subsided, there were twenty-one cases with a leukocytosis. In thirteen of these cases the leukocytes decreased to normal in a crisis-like manner within twenty-four to thirty-six hours after the subsidence of the fever. In seven cases the white cells returned to a normal level in a lysis-like manner only after forty-eight hours or more, while in one case the leukocytosis did not change. Of the six patients with a normal white cell count to whom the drug was administered, a moderate leukopenia without neutropenia developed in two. In the other four the leukocyte count did not change. The alteration in the leukocyte response was in the nature of a marked absolute reduction of all the cell elements without any characteristic relative change in the proportion of the different white blood cells as studied by the Schilling count. In the majority of cases the Schilling differential count reflected only what one could consider a healing infection. An increase in the leukocyte count attributable to the sulfanilamide did not occur in a single case. In six of seven patients without an infection but with a leukocytosis there was a rapid decrease of the white cells to a normal level when the drug was administered. From this it would seem that the beneficial action of sulfanilamide is due to its own action in the blood stream rather than to its enhancing the power of the leukocytes or increasing their number to control the infection.

Archives of Neurology and Psychiatry, Chicago

39: 655-884 (April) 1938

Periarteritis Nodosa: Clinicopathologic Study with Special Reference to Nervous System. J. W. Kernohan and H. W. Woltman, Rochester, Minn.—p. 655.
Nucleus Lateralis Medullae: Experimental Study of Its Anatomic Connections in Macacus Rhesus. G. A. Blakeslee, I. S. Freiman and S. E. Barrera, New York.—p. 687.
Experiences with Insulin Shock Therapy in Schizophrenia. H. H. Reese, Madison, Wis., and A. Vander Veer, Chicago.—p. 702.
*Metrazol Shock Treatment of "Functional" Psychoses. A. A. Low, I. R. Sonenthal, M. F. Blaurock, M. Kaplan and Irene Sherman, with technical assistance of Frances C. Whitcomb, Chicago.—p. 717.
*Mechanism of Migraine Headache and Action of Ergotamine Tartrate. J. R. Graham and H. G. Wolff, New York.—p. 737.
Restlessness in Children. P. M. Levin, Dallas, Texas.—p. 764.
Bad Taste (Cacogeusia). H. H. Hart, New York.—p. 771.
Human Autonomic Pharmacology: XI. Effect of Benzedrine Sulfate on Argyll Robertson Pupil. A. Myerson and W. Thau, Boston.—p. 780.
Autonomic and Motor Localization in Hypothalamus. L. Ectors, N. L. Brockens and R. W. Gerard, Chicago.—p. 789.
Experimental "Encephalitis" Produced by Intravenous Injection of Various Coagulants. P. F. A. Hoefer, T. J. Putnam and Mildred G. Gray, Boston.—p. 799.
Subarachnoid Hemorrhage During Shock Therapy for Schizophrenia. H. Freed and C. W. Wofford, Philadelphia.—p. 813.

Metrazol Shock Treatment of "Functional" Psychoses.—Low and his associates discuss the sixty-six patients with functional psychoses whose treatment with metrazol was terminated by the middle of September 1937. Patients with psychoses associated with "organic" disease were excluded. To thirty of the sixty-six patients metrazol was given first, administration of metrazol to nine patients was preceded by a course of insulin shocks, in eleven by narcosis, in nine by fever and in seven by fever and narcosis. Metrazol is administered by the intravenous route in a 10 per cent solution. As a first dose 4 cc. of the 10 per cent solution to women and 5 cc. to men is given without regard to body weight. It is important to administer the drug with the greatest possible speed, and the use of a 20 gage needle is advisable. Most patients acquire a tolerance which necessitates a progressive increase in the dose. The treatment gave a relatively high rate of recovery for persons with manic-depressive conditions and those "without psychosis." For the schizophrenic group, treatment yielded a relatively high rate of recovery only if given within six months after onset of the disease. For manic-depressive conditions the superiority of the metrazol treatment to that with prolonged narcosis appears evident; it has increased the rate of remission and reduced the incidence of dangers and complications. The claim advanced by some authors that the outlook for recovery is proportional to the "convulsive threshold" of the patient is not substantiated by the present investigation. Contrary to the assertion of some investigators, the metrazol paroxysm differs in several respects from the "grand mal" attack of cryptogenic epilepsy.

Mechanism of Migraine Headache.—Graham and Wolff found that changes in the intensity of migraine headache are related to changes in amplitude of pulsations of branches of the external carotid arteries. Factors that decreased the

amplitude of the pulsations decreased the intensity of the headache and vice versa. Reduction in the amplitude of pulsations of the temporal artery by manual pressure on the common carotid artery of the affected side was accompanied by reduction in the intensity of the headache. Distention of the temporal artery by increasing experimentally the intramural hydrostatic pressure resulted in pain. Ergotamine tartrate, in diminishing the intensity of migraine headache, reduced the amplitude of pulsations of the aforementioned arteries by about 50 per cent. Observations and photographs made before and during the action of ergotamine during thirty-two attacks of migraine in sixteen subjects revealed vasoconstriction of the temporal and middle meningeal arteries. These data support the postulate that the head pain of migraine is produced by distention of the cranial arteries and that termination of the headache by ergotamine tartrate is due to its capacity to constrict these cranial arteries and thus reduce the amplitude of their pulsations.

Archives of Surgery, Chicago

36: 561-722 (April) 1938

Acute Iliac Adenitis: Report of Eighteen Cases. F. G. Irwin, San Juan, Puerto Rico.—p. 561.
Nonspecific Mesenteric Adenitis: Report of 140 Cases. W. Klein, New York.—p. 571.
Distribution and Excretion of Water and Chlorides After Massive Saline Infusions: Experimental Study. R. A. Cutting, A. M. Lands and P. S. Larson, Washington, D. C.—p. 586.
Fat Embolism: Résumé of Literature Plus Some Newer Thoughts on Diagnosis. C. S. Scuderi, Chicago.—p. 614.
Normal Anatomy and Variations of Peripheral Nerves of Leg and Foot: Application in Operations for Vascular Diseases: Study of 100 Specimens. M. T. Horwitz, Philadelphia.—p. 626.
Calcification and Ossification in Tuberculoma of the Brain: Review of Literature and Report of Three Cases. H. S. Evans, Columbus, Ohio, and C. B. Courville, Los Angeles.—p. 637.
*Calcification About Flexor Carpi Ulnaris Tendon. H. Milch and H. H. Green, New York.—p. 660.
Changes in the Mammary Gland of Rat Produced by Various Glandular Preparations. E. B. Astwood, Boston, and C. F. Geschickter, Baltimore.—p. 672.
Inguinal Herniоplasty with Fascia Transplant. B. L. Fleming, Philadelphia.—p. 698.
Sixty-Fifth Report of Progress in Orthopedic Surgery. J. G. Kuhns, S. M. Roberts, R. J. Joplin, W. Elliston and F. Ifeld, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York, and R. I. Stirling, Edinburgh, Scotland.—p. 705.

Calcification About the Flexor Carpi Ulnaris Tendon.—Milch and Green encountered patients who presented sharply localized pain and tenderness over the area around the pisiform bone, a pathognomonic limitation of motion at the wrist, occasional signs suggesting an inflammatory reaction, a characteristic roentgenogram showing calcification and early subsidence of symptoms. Though all the cases showed a similarity, there seemed to be sufficient variation to justify subdivision into three main types: (1) a hyperacute form, (2) an acute form with calcification and (3) an acute form without calcification. In the absence of any pathologic specimen they have inferred the location of the calcium deposit. No definite etiologic factor can be established. Case 1 suggests an infectious origin. On the other hand, in the case reported by Cohen and in cases 3 and 5 the symptoms are so definite that the relation of trauma or overuse cannot be denied. In the other cases such a definite traumatic etiology could not be established, though it seems to be of more than casual significance that the prominence of the pisiform bone, into which the flexor carpi ulnaris tendon is inserted, is the area that is normally brought into contact with the desk or table top. Because of the abrupt mode of onset of the symptoms and their rapid subsidence under treatment, a traumatic origin seems likely, but an underlying focus of infection, a rheumatic diathesis or a metabolic disturbance cannot be categorically excluded. Apart from the tenderness, swelling and limitation of motion, the characteristic feature is the appearance of the radiopaque substance situated near the pisiform bone. The calcific shadow may appear as a delicate lacework or in more solid masses. It may be circular, oval or elongated. In all probability the size and shape of the shadow depend on the stage of the process and the intensity of the reaction. The condition must be differentiated from a stenosing tendovaginitis or an acute infectious process and roentgenographically from osteomyelitis or periostitis of the pisiform bone, an accessory carpal ossicle or an old comminuted fracture of the ulnar styloid. Surgical exploration has not been found justifiable. Usually simple rest on a splint, application of heat and administration of salicylates have resulted in prompt disappearance of the symptoms.

Arkansas Medical Society Journal, Fort Smith

34: 231-258 (April) 1938

Hypochondriacal States. T. A. Watters, New Orleans.—p. 231.
Ocular Allergy. R. C. Cook, Little Rock.—p. 236.
Diarrhea in the Artificially Fed Baby. R. Hood, Russellville.—p. 238.

Canadian Public Health Journal, Toronto

29: 103-152 (March) 1938

Tuberculosis Control in New Brunswick. A. M. Clarke, Lakeville, N. B.—p. 103.
Simplicity of Treatment of Syphilis. G. S. Fenton, Ottawa, Ont.—p. 109.
International Relationships of Department of Pensions and National Health. C. P. Brown, Ottawa, Ont.—p. 116.
Records in Public Health Nursing. Maude H. Hall, Ottawa, Ont.—p. 122.
Circumstances of Accidental Death in Canada in 1936. Yvonne Baudry, Ottawa, Ont.—p. 127.
Cross Connections in Water Supplies. R. Cyr, Montreal.—p. 131.
*Agglutination of Salmonella and Dysentery Suspensions by Serums of Normal Persons. J. M. Desranleau, Quebec, Que.; L. P. Lebeau, Montreal, and M. H. McCrady, Quebec, Que.—p. 136.

Agglutination of Salmonella and Dysentery Suspensions by Serums.—Desranleau and his associates examined groups of from 100 to 200 control serums from persons in Montreal and a group of fifty-eight serums from hospital patients, the majority of whom were ill with nonenteric febrile disease, in respect of their ability to agglutinate various salmonella, dysentery and brucella suspensions. The more important features of the results obtained include the following: the usual discrepancy between the Salmonella typhi H titers of male and those of female serums; a curious discrepancy between the Salmonella aertrycke specific titers of these two groups of serums; the comparatively wide distribution of Bacillus dysenteriae Flexner X and Y agglutinins; the similarity between the Flexner dysenteriae titers of the male and those of the female serums; the similar incidence of Flexner dysenteriae agglutinins in the control serums and in the serums of patients suffering from nonenteric febrile diseases, and the infrequent occurrence of high or moderately high titers of agglutinins for Brucella abortus, Salmonella paratyphi C sp. and Bacillus dysenteriae Sonne in the serums examined. Moderately high titers of agglutinins for Bacillus dysenteriae Flexner were encountered in the Montreal serums with a frequency much greater than that reported to have been found in serums from the general population of British Columbia.

Florida Medical Association Journal, Jacksonville

24: 467-518 (March) 1938

Recent Advances in Diagnosis and Treatment of Bronchial Asthma. J. R. Vallotton, Daytona Beach.—p. 479.
Routine Study of Fresh, Unstained Vaginal Secretions in Obstetrics and Gynecology. J. R. Perdue, Miami.—p. 482.
Observation on Studies of Kidney Function. W. W. Kirk, Jacksonville.—p. 485.
Acute Post-Traumatic Osteoporosis. A. R. Beyer, Tampa.—p. 489.
*Study of Blood Sedimentation Test in Pulmonary Tuberculosis: Preliminary Report. A. J. Logie, Jacksonville.—p. 491.

Blood Sedimentation in Pulmonary Tuberculosis.—Logie performed 148 sedimentation tests in fifty-three cases of tuberculosis. There were fifteen patients (group A) who over a period of six months showed few if any clinical signs of any active pulmonary lesion, with stationary or regressive x-ray signs, negative sputum or occasional positive results on concentrated examination of the sputum or gastric contents. In this group the male curve falls to 25 mm. within the first fifteen minutes and to 46 mm. in one hour, the female curve to 39 and 64 mm. respectively. Group B (twenty cases) represents the average curves of those cases in which there was slight to moderate activity. For the males the curve falls to 55 mm. in the first fifteen minutes and to 67 mm. in one hour, and for the females to 60 and 69 mm. respectively. Group C represents those cases in which there was moderate to marked activity. The male curve falls to 67 mm. in fifteen minutes and to 76 mm. in one hour, while the respective female curve declines to 68 and 76 mm. These results enable one to classify the tuberculous cases according to activity. Using the Brooks

method, the author considers the first fifteen minutes of the test (induction period) more significant than the type of curve over one hour of observation. As a variable degree of anemia is present in the majority of tuberculous cases and as the sedimentation rate is usually accelerated in anemia, he feels that a single sedimentation rate may establish a faulty criterion unless corrections are made by hematocrit estimations or the average of several rates taken at different intervals. The study corresponds with the reports of other investigators that in pulmonary tuberculosis the sedimentation speed of the blood increases with the activity of the disease. Artificial pneumothorax decreases the sedimentation rate slightly, if not immediately after a refill. The diminished congestion brought about by the procedure is believed to be the underlying cause. After a comparative study of the leukocytic index it was evident that the sedimentation rate gave more reliable information as to the progress of the disease in the patient.

Johns Hopkins Hospital Bulletin, Baltimore

62: 91-158 (Feb.) 1938

Researches on Tetanus: VI. Production of Reflex Motor Tetanus by Intraspinal Injections of Tetanus Toxin. W. M. Firor and A. F. Jonas Jr., Baltimore.—p. 91.

Output of Sugar and Potassium by Turtle's Surviving Liver. C. D. Snyder and R. E. Johnson, Baltimore.—p. 110.

Studies on Experimental Hypophysectomy in Dogs: III. Somatic, Mental and Glandular Effects. W. E. Dandy and F. L. Reichert, Baltimore.—p. 122.

62: 159-234 (March) 1938

Arteriolosclerosis in Childhood: Report of Two Cases. Harriet G. Guild, F. B. Kindell and T. A. Gibson, Baltimore.—p. 159.

*Clinical Study of Myotonic Dystrophy and Myotonia Congenita, with Especial Reference to Therapeutic Effect of Quinine. L. C. Kolb, A. M. Harvey and M. R. Whitehill, Baltimore.—p. 188.

Hereditary Malformation of Vertebral Bodies. S. Jarcho and P. M. Levin, Baltimore.—p. 216.

Slowly Absorbed Epinephrine Preparation: Preliminary Report. E. L. Keeney, Baltimore.—p. 227.

Quinine in Myotonic Dystrophy and Congenital Myotonia.—Kolb and his collaborators describe the effect of quinine, dimethyl carbamic ester of hydroxy phenyl-trimethyl ammonium methyl sulfite, the physostigmine derivative and other drugs in eight cases of atrophic and in one of congenital myotonia. The action of quinine in two cases of myasthenia gravis is discussed. Three daily dynamograph records were made of four patients: during a control period, during a period in which quinine alone was given, when quinine and the physostigmine derivative were administered, and during a control period. These were recorded graphically and the tracings obtained provided an objective estimate of the therapeutic effect and antagonistic action of each drug. Quinine sulfate abolished the myotonus but had no effect on muscular strength. Quinine sulfate counteracted the effect of the physostigmine derivative in two cases of myasthenia gravis and increased the symptoms and signs of the disease. The physostigmine derivative increased myotonus and directly antagonized the full therapeutic effect of quinine sulfate. Parathyroid extract, potassium chloride and adrenal cortex extract failed to reduce myotonus.

Journal of Bacteriology, Baltimore

35: 207-342 (March) 1938

Characteristics of Antipneumococcus Serums Produced by Various Animal Species. F. L. Horsfall Jr., New York.—p. 207.

Electrophoretic Migration Velocity of Escherichia Coli After Cultivation on Mediums of Varying Composition: I. Observations Following Changes in Organic Constituents. R. P. Tittsler and G. P. Berry, Rochester, N. Y.—p. 213.

Some Fundamental Investigations on Resistance of Tubercle Bacilli. H. J. Corper and M. L. Cohn, Denver.—p. 223.

Detection of Antigenic Variants of Brucella by Means of an Opsonocytophagic Test. Myrtle Mungef and I. F. Huddleson, East Lansing, Mich.—p. 255.

Colony Organization of Certain Bacteria with Reference to Sporulation. H. C. Greene, Madison, Wis.—p. 261.

Species Specific Immunity to Hemolytic Streptococcus Infections Induced in White Mice by Immunization with an R Variant of an Erysipelas Strain: Significance of Cell Autolysis in Relation to Antibody Response. Sophie Spicer and Emily L. Bloom, New York.—p. 289.

Reduction and Concentration of Methylene Blue by Certain Pathogenic Fungi. J. W. Williams, Cambridge, Mass.—p. 305.

Differentiation of Pathogenic Staphylococci from Nonpathogenic Types. G. H. Chapman, C. Berens, Edith L. Nilson and Lillian G. Curcio, New York.—p. 311.

Journal of Investigative Dermatology, Baltimore

1: 1-82 (Feb.) 1938

Experimental Production of Xanthomas in Laboratory Animals. F. Schaaf; translated by R. L. Baer, New York.—p. 11.

Nipple Test: Studies in Local and Systemic Effects on Topical Application of Various Sex Hormones. W. Jadassohn, E. Uehlinger and A. Margot, Zurich, Switzerland; translated by R. L. Baer, New York.—p. 31.

Sensitization to Simple Chemicals: III. Relationship Between Chemical Structure and Properties, and Sensitizing Capacities in Production of Eczematous Sensitivity in Man. M. B. Sulzberger and R. L. Baer, New York.—p. 45.

Further Investigations of Poison Ivy Hypersensitiveness in Guinea Pigs. R. L. Kile, St. Louis, and A. W. Pepple, Lodi, Calif.—p. 59.

Skin Reactions: II. Effect of Allergic and Histamine Wheals on Rate of Absorption of Dyes and Blood from Human Cutis. H. A. Abramson and Margery Engel, New York.—p. 65.

Journal of Lab. and Clinical Medicine, St. Louis

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Mycologic Findings in Sputum. Mildred T. Woolley, Tucson, Ariz.—p. 553.

Influence of Quantity of Serum Bilirubin on Type of van den Bergh Reaction. R. Gregory, Washington, D. C., and Marie Andersch, Philadelphia.—p. 572.

Electrocardiographic Studies During Anesthesia with Intravenous Barbiturates. P. P. Volpitto and B. A. Marangoni, New York.—p. 575.

*Incidence of Tuberculosis in a New York City Diabetic Clinic. Elaine P. Ralli and I. Steinberg, New York.—p. 581.

*Bacteriostatic Action of Prontosil Soluble, Sulfanilamide and Disulfanilamide on Sporulating Anaerobes Commonly Causally Associated with Gaseous Gangrene. R. S. Spray, Morgantown, W. Va.—p. 609.

Urinary Excretion of Single Doses of Sulfanilamide. J. V. Scudi and H. D. Ratish, New York.—p. 615.

Crystal Tests for Minute Amounts of Morphine. C. C. Fulton, St. Paul.—p. 622.

Fröhde's Reagent: Reagent for Morphine and for Other Phenolic Compounds. C. C. Fulton, St. Paul.—p. 625.

Crypt Aspiration: Spray Culture Method for Isolation of Bacillus Dysenteriae. J. Felsen, New York.—p. 630.

Chemical Diagnosis of Pregnancy by Detection of Estrin in Urine: III. Modifications of Procedure and Results in 193 Determinations. M. J. Schmulovitz and H. B. Wylie, Baltimore.—p. 633.

Further Observations on Use of Nigrosine to Demonstrate Treponema Pallidum in Syphilitic Lesions. R. B. Dienst, Augusta, Ga.—p. 646.

Determination of Sulfanilamide in Cerebrospinal Fluid by Means of Sodium-Beta-Naphthoquinone-4-Sulfonate. E. G. Schmidt, Baltimore.—p. 648.

Determination of Para-Aminobenzene Sulfonamide (Sulfanilamide) in Urine and Blood. J. Doble and J. C. Geiger, San Francisco.—p. 651.

Incidence of Tuberculosis in Diabetes.—Ralli and Steinberg investigated the occurrence of tuberculosis in the 748 diabetic patients attending the Diabetic Clinic of the Third Medical Division (Bellevue Hospital) and the Diabetic Clinic of New York University College of Medicine. The observations were made over a period of seven years. Of the 748 patients, thirty-three had active pulmonary tuberculosis, an incidence of 4.3 per cent. Excluding the one patient who was 79 years of age, the average age was 47.8 years. In twenty-nine cases the onset of the diabetes preceded any signs or symptoms of tuberculosis. The diets used by these patients were high in carbohydrate, moderate to high in fat and with a protein intake of from 65 to 85 Gm. All but one patient required insulin, and twenty-two of them required more than 30 units daily. Ten of the patients received pneumothorax. Two had, in addition, pneumolyses which were not successful. In one case there was hemoptysis which could not be controlled by pneumothorax or phrenicotomy, and the patient finally died of a bronchiogenic spread. Five of the patients, during their hospital period, left against advice and any further information about them could not be obtained. Thirteen of the thirty-three patients observed have died since they acquired tuberculosis. Ten no longer attend the clinic but as far as is known are still alive. Five of the remaining ten are now attending the diabetic clinic, having been treated successfully for their tuberculosis. The remaining five are at present in sanatoriums. In three of the five patients attending the clinic the disease is considered inactive. As the tuberculous diabetic patient is apt to have diabetes in a severe form the authors have found it advisable to give feedings four times in twenty-four hours, as the usual three meals leave the patient with no outside source of energy for a period of fourteen hours, during which time he would be forced to burn his body stores. Insulin is given with each feeding in amounts sufficient to keep the patient approximately sugar free and always acetone free. The intake of fluid and salt should be adequate. Diabetic patients become dehydrated

very readily, particularly in the presence of an infection. Therefore the patients are advised to drink ample amounts of water and to take a slight excess of salt. Normally a person takes in approximately 4 Gm. of sodium chloride as such daily. For severely affected tuberculous diabetic patients this should be increased to 6 Gm. daily or more if necessary. An adequate intake of calcium is assured by having the patient take at least three glasses of milk daily.

Bacteriostatic Action of Sulfanilamide Compounds on Sporulating Anaerobes.—Spray measured the bacteriostatic action of sulfanilamide, disulfanilamide and prontosil soluble on sporulating anaerobes commonly causally associated, alone or in combination, with human gaseous gangrene. The drugs exert an apparently specific selective action against certain species, notably Clostridium tetani, lentoputrescens, novyi, septicum and histolyticum. On the contrary, Clostridium welchii and the intensely proteolytic types, such as Clostridium sporogenes and bifermentans, as well as the toxic Clostridium botulinum type A, are scarcely affected, at least by any concentrations tolerated by human beings. The bacteriostatic activity increases in order: prontosil soluble, sulfanilamide and disulfanilamide. These results parallel those of Rosenthal, Bauer and Branham in testing these compounds for protection of mice against streptococcic and meningococcic infection. Admitting Bohlman's "dramatic" results in the treatment of three cases of presumably Clostridium welchii infections with sulfanilamide, it would seem necessary to assume some secondary therapeutic activity of the drug other than a simple and direct bacteriostatic action on the bacteria themselves.

Journal of Nervous and Mental Disease, New York

87: 405-544 (April) 1938

Meningoencephalomyeloradiculitis: Clinicopathologic Study. P. Goelker, New York.—p. 405.
Recurring Maculopapular Exanthems as Preludes to Marked Exacerbations in Myasthenia Gravis. L. F. Barker, Baltimore.—p. 416.
Psychoses Among Followers of Father Divine. Lauretta Bender and Zuleika Yarrell, New York.—p. 418.
Huntington's Chorea and Luetic Meningoencephalitis: Histopathologic Report of Case of Huntington's Chorea Clinically and Luetic Meningoencephalitis Pathologically. T. T. Stone and E. I. Falstein, Chicago.—p. 450.
Comments on Treatment of Drug Addiction with Protracted Narcosis. W. H. Chao, Y. K. Hsü and R. S. Lyman, Peiping China.—p. 454.
Upper Motor Neuron Sequels in "Jake" Paralysis: Clinical Follow-Up Study. M. A. Zeligs, Cincinnati.—p. 464.

Journal of Nutrition, Philadelphia

15: 211-320 (March) 1938

Effect of Sulfhydryl Compounds on Milk Production. R. G. Daggs, Burlington, Vt., and Viola S. M. Lidfeldt, Rochester, N. Y., with technical assistance of J. H. Fuller.—p. 211.
Paralysis in the Young of Vitamin E Deficient Female Rats. H. S. Olcott, Iowa City.—p. 221.
*Effects of Small Amounts of Ethyl Alcohol on Respiratory Metabolism of Human Subjects During Rest and Work. R. C. Grubbs and F. A. Hitchcock, Columbus, Ohio.—p. 229.
Recovery Following Suppression of Growth in the Rat. Miriam F. Clarke and A. H. Smith, New Haven, Conn.—p. 245.
Relative Effects of Certain Saccharides and of Vitamin D on Mineral Metabolism of Rats. Julia Outhouse, Janice Smith and Irene Twomey, Urbana, Ill.—p. 257.
Use of Fibrin in Synthetic Diets. J. H. Jones, Philadelphia.—p. 269.
Lack of Vitamin C in Diet and Its Effect on Jaw Bones of Guinea Pigs. Mary T. Harman, Martha M. Kramer and H. D. Kirgis, Manhattan, Kan.—p. 277.
Utilization of Energy Producing Nutriment and Protein as Affected by Plane of Protein Intake. E. B. Forbes, L. Voris, J. W. Bratzler and W. Wainio, State College, Pa.—p. 285.
Studies on Effects of Bovine Blindness-Producing Ration on Rabbits. P. H. Phillips and G. Bohstedt, Madison, Wis.—p. 309.

Effects of Ethyl Alcohol on Metabolism.—Grubbs and Hitchcock determined the effects of small amounts of ethyl alcohol on the respiratory exchanges during rest and work. Two series of experiments have been carried out on five different subjects, on whom a total of more than fifty tests were made. In the first series of experiments three subjects were used. With these subjects both control and alcohol tests were run while the subject was lying in a basal condition, while he was sitting at rest on a bicycle and while he was pedaling the bicycle at a rate of from 2,500 to 3,000 foot pounds of work per minute. In basal tests the subject reported to the laboratory in a postabsorptive condition. One or two basal metabolism determinations were made. The subject then ingested 200 cc. of water if the test was a control test, or 200 cc. of about 10 per cent alcohol in alcohol tests. The quantity of alcohol given was from 0.25 to 0.3 Gm. per kilogram of body weight. In the work tests the dosage of alcohol was the same as that used in basal tests. In the second series of experiments about the same quantity of alcohol was ingested, but in this case it was diluted with 200 cc. of a 10 per cent solution of dextrose. Alcohol produced no specific dynamic action during the first two hours following its ingestion. There was no significant change in the ventilation equivalent or in the alveolar carbon dioxide following the ingestion of alcohol. Utilization of alcohol while resting was greater when given with dextrose than when given alone. The rate of oxidation of alcohol in the body was higher in the sitting position than when reclining and still higher when working on the bicycle ergometer than when sitting at rest. The results are interpreted as presumptive evidence that the muscles are capable of using the energy of ethyl alcohol in the performance of work.

Journal of Pediatrics, St. Louis

12: 287-428 (March) 1938

Ear Complications of Scarlet Fever. A. L. Hoyne and R. Spaeth, Chicago.—p. 287.
*Conservative Management of Appendical Peritonitis in Children. J. M. Adams, Minneapolis, and P. M. Bancroft, Lincoln, Neb.—p. 298.
Individual Isolation. P. M. Stimson, New York.—p. 313.
Epidemic of Mouth Infection of the Newborn. L. H. Douglass, Baltimore.—p. 323.
Accidental Transmission of Malaria Through Injection of Whole Blood. F. H. Wright, New York.—p. 327.
Pubertas Praecox Due to Dextrolateral Granulosa Cell Tumor of Ovary in a Four Year Old Girl. E. Mannheimer, Stockholm, Sweden.—p. 350.
Acute Hemolytic Anemia (Lederer Type). E. H. Baxter and M. W. Everhart, Columbus, Ohio.—p. 357.
Enterogenous Cyst of Duodenum Simulating Pyloric Stenosis: Report of Case in an Infant with Recovery Following Gastro-Enterostomy. J. Basman, St. Louis.—p. 363.
Encopresis in Children. H. F. Shirley, Iowa City.—p. 367.
Quantitative Collection of Urine from Small Children. Estelle E. Hawley, Rochester, N. Y.—p. 381.

Conservative Management of Appendical Peritonitis.—Adams and Bancroft used the conservative method in treating 110 cases of appendical peritonitis in children less than 16 years of age. The surgical and pathologic observations have been analyzed in ninety-four cases in which deferred appendectomies were performed. The conservative treatment consisted of rest, continuous gastroduodenal siphonage, hot applications to the abdomen, para-oral fluids and sedatives. An incidence of more than 10 per cent in major exacerbations was observed. Deferred appendectomy is imperative in every case. The mortality in the 110 cases was 4.5 per cent. There were no deaths in the group of ninety-four deferred appendectomies. The duration was forty-eight hours or less in fifty-three cases; the largest group of cases was observed in the period between thirty-six and forty-eight hours, three, four and five days in thirty-three and widely scattered in twenty-four. There were no deaths in the extended group; all fatalities occurred in cases with histories of duration from thirty-nine to ninety-six hours. The authors consider the duration as only one factor determining the course of treatment. The progress of the disease is probably of the greatest consequence; it might be better to speak of uncomplicated and complicated rather than of early and late appendicitis. The temperature and pulse on admission were found to be of considerable assistance in deciding the question of operative or conservative treatment. The average temperature and pulse in all cases of complicated appendicitis treated conservatively was 101.7 F. and the pulse 119 per minute. In the typical case the temperature was from 102 to 103 F. with a rapid pulse of from 130 to 150 per minute. The figures are well above those ordinarily seen in cases of uncomplicated appendicitis. Many cases coming in late (after five days) tend to lower the general averages. The infection has often become well localized with a large mass in the right lower quadrant, the result sought in the conservative treatment having already been accomplished. The leukocyte count varied from 30,000 maximum to 7,400 minimum. In the late cases and those with generalized peritonitis the figure is often low, indicating a poor response to infection. The typical white blood count was more than 20,000, with 85 or more neutrophils per hundred cells. The general condition of the patient should always be evaluated as completely as possible. The state of hydration and degree of

toxicity may be of considerable assistance in deciding on operative or conservative therapy. Separation of the loops of intestine by fluid could frequently be demonstrated roentgenologically in cases of generalized peritonitis. The average duration of fever in all cases treated conservatively was 9.2 days.

Journal of Pharmacology & Exper. Therap., Baltimore

62: 263-362 (March) 1938

Assay of Gonad Stimulating Preparations. M. C. D'Amour and F. E. D'Amour, Denver.—p. 263.
Nembutal Anesthesia: III. Median Lethal Dose of Nembutal (Pentobarbital Sodium) for Young and Old Rats. E. B. Carmichael, University, Ala.—p. 284.
Pharmacologic Action of Deuterium Oxide: V. Calorigenic Saturation Level and Influence of Ergotoxine. H. G. Barbour and Lillie E. Rice, New Haven, Conn.—p. 292.
Nature of Acquired Tolerance to Alcohol. H. W. Newman and A. J. Lehman, San Francisco.—p. 301.
Rat in Assay of Cortin. F. E. D'Amour and Dorothy Funk, Denver.—p. 307.
Analysis of Circulatory Actions of Ethylnorsuprarenin. W. M. Cameron, J. M. Crismon, L. J. Whitsell and M. L. Tainter, San Francisco.—p. 318.
Action of Merthiolate on Gonadotropic Effect of Anterior Pituitary Extract. G. Chen and H. B. van Dyke, Peiping, China.—p. 333.
Tolerance and Fate of Pressor Principle of Posterior Pituitary Extract in Anesthetized Animals. E. Larson, Philadelphia.—p. 346.

Journal of Thoracic Surgery, St. Louis

7: 351-462 (April) 1938

Experience with Collapse Therapy for Pulmonary Tuberculosis in the Fifth and Sixth Decades. H. R. Decker, Pittsburgh.—p. 351.
Partial Thoracoplasty for Pulmonary Tuberculosis, with Suggested Plan of Operation Including Preliminary Anterior Chondrocostectomy, Together with Review of Results. O. H. Wangensteen, H. A. Carlson and W. F. Bowers, Minneapolis.—p. 365.
Management of Excessively Mobile Mediastinum in Surgical Collapse of Tuberculous Pulmonary Cavities. B. P. Potter, Secaucus, N. J.—p. 382.
Effect of Phrenic Nerve Interruption on Gastrointestinal Tract. F. R. Harper, Denver.—p. 398.
*Appraisal of Closed Internal Pneumonolysis in Pulmonary Tuberculosis: Relation of Tuberculous Empyema to Operation. E. C. Drash, University, Va.—p. 411.
*Tuberculous Empyema: Report on 154 Cases. W. Woodruff, Saranac Lake, N. Y.—p. 420.
Pleural Endoscopy and Photography. A. Gullbring, Söderby, Uttran, Sweden.—p. 433.
Studies of Cardiac Output of Anesthetized Dogs During Continuous and Intermittent Inflation of Lungs. G. H. Humphreys, R. L. Moore, H. C. Maier and Virginia Apgar, New York.—p. 438.
Continuous Anterior Siphon Drainage and Irrigation of Pyopneumothorax. R. M. Franklin, Valhalla, N. Y.—p. 452.
Selective Thoracoplasty for Persistent Basal Tuberculous Cavities. S. O. Freedlander, Cleveland.—p. 455.

Closed Internal Pneumonolysis in Pulmonary Tuberculosis.—Drash discusses the outcome of 251 separate pneumonolyses performed on 230 patients. The operation has been performed by the high frequency current and the Davidson thoracoscope. Most of the patients were receiving pneumothorax refills for from four to six months or longer. The only valid contraindication to pneumonolysis is the existence of an acute pleurisy with fluid, either serous or purulent. Successful operations can be done in chronic afebrile cases of pleurisy with effusion, provided the adhesions are not covered with fibrin and can be clearly seen. The general results, exclusive of complications, have been most satisfactory. There have been no deaths attributable to the operation. Of the cavities present, 74.8 per cent were closed. A satisfactory collapse was obtained in 86.4 per cent of the patients operated on. Sixty-four patients (27 per cent) had fluid in the pleura at the time of operation. Fourteen additional patients (6 per cent) had fluid after operation, mostly within a few days. Among the total of seventy-eight patients (33.6 per cent) who had fluid at one time or another, in six the fluid became purulent. The total incidence of clear fluid and of tuberculous empyema in the present series is well within the limits of corresponding incidence to be expected from pneumothorax alone. Therefore the evidence indicates that pneumonolysis is not an important factor in the development of intrapleural fluid. Only one patient had tuberculous empyema within less than five months after operation. Five (of ninety-nine operated on) of the six patients with tuberculous empyema came from one institution which has a high proportion of patients with moderate and far advanced pulmonary tuberculosis. Rupture of a cavity into the pleura occurred in three of these, followed immediately by death. As they occurred three and one-half, four and one-half and nine months after operation, they were not ascribed to it.

Tuberculous Empyema.—Woodruff reviews 154 cases of tuberculous empyema occurring in the practice of local physicians and sanatoriums, with a follow-up of from three to eight years. There were forty-seven known persistent bronchopleural fistulas and forty-two known secondary infections. About half were infected from the onset by either rupture of the lung or contamination of the pleura. The rest began as straight tuberculous fluids and became infected later. Of those patients who originally had a noncontaminated tuberculous empyema and lived long enough to acquire other complications, 30 per cent finally had them either by perforation or by secondary infection. The death rate is about 30 per cent in the uncontaminated tuberculous group and about twice that for the mixed infections and for the fistulas. The problem of all empyemas is a dual one: the infection itself and the abnormal pleural space. The attempt to control the former without obliteration of the latter is difficult although sometimes possible. About 70 per cent of the straight tuberculous group have survived the infection to date.

Medical Annals of District of Columbia, Washington

7: 81-106 (March) 1938

What May Be Done in Control and Prevention of Common Contagious Diseases. W. F. Burdick, Washington.—p. 81.
Common Errors Committed in Handling "Neurotic" Patients. I. Rodis, Washington.—p. 86.
Sympathectomy for Control of Pain. O. H. Fulcher, Washington.—p. 89.
Treatment of Acute Gastric Hemorrhage. W. M. Ballinger, Washington.—p. 93.
Comparison of Injection and Operative Treatments of Hernia. J. O. Warfield Jr., Washington.—p. 96.
Pneumococcic Peritonitis Treated with Prontylin. W. W. Sager and W. Raffel, Washington.—p. 99.

New England Journal of Medicine, Boston

218: 325-370 (Feb. 24) 1938

Development of Medicine and Its Trends in the United States, 1636-1936. H. E. Sigerist, Baltimore.—p. 325.
Renal Cancer: End Results in 105 Consecutive Cases. E. R. Mintz, Boston.—p. 329.
Doctors and Books. P. D. White, Boston.—p. 338.
Granulocytopenia: Report of Case with Autopsy. C. C. Shaw, Bellows Falls, Vt.—p. 343.
The Relief of Pain in Cancer. J. S. Hodgson, Boston.—p. 347.

218: 371-410 (March 3) 1938

*Late Results Following Use of Insulin in 100 Cases of Malnutrition. H. Blotner, Boston.—p. 371.
Pernicious Anemia Due to Entero-Enterostomy: Report of Case Cured by Reoperation. W. Richardson, Boston.—p. 374.
Acute Pancreatitis. G. R. Dunlop and E. L. Hunt, Worcester, Mass.—p. 376.
Posture in Anesthesia. A. H. Miller, Providence, R. I.—p. 385.
Ruptured Aneurysm of Left Common Iliac Artery Simulating Perinephric Abscess. I. J. Zimmerman, Manchester, N. H., and C. E. Butterfield, Concord, N. H.—p. 387.
Volvulus: Study of Twenty-Two Cases. E. D. Leonard and S. Derow, Newton, Mass.—p. 388.

Late Results of Insulin in Malnutrition.—Blotner had fifty-four women and forty-six men who were ambulatory and normal physically except for from moderate to severe malnutrition, and who had tried to gain weight by one method or another but without success. The patients usually injected 10 units of insulin three times a day about twenty minutes before meals. A few took insulin twice a day, and in rare instances the dose was increased to 20 units two or three times a day. The insulin was usually taken for from one to three months, the shortest period being two weeks and the longest seven months. A liberal diet was advised. The immediate effects were a gain in weight and an improvement in appetite, which varied in individual patients. In most cases the gain was from 3 to 4 pounds (1.3 to 1.8 Kg.) a week for the first two or three weeks; it became less marked as time progressed. Finally, the weight remained constant regardless of the administration of insulin. Most of the patients observed an improvement in general and mental condition, an increase in strength and efficiency and a better gastrointestinal function. The gain in weight appeared to be due to an actual increase in the deposit of fat and not to edema, suggested by the measuring of the fluid intake and output. The weight was followed for from one to

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six years after the cessation of insulin treatment. Of the twenty-six patients observed for one year after discontinuing insulin, seventeen retained the added weight, six lost it all and three maintained less than half the gained weight. Of the twelve patients followed for two years, five maintained the gain, three lost the added weight shortly after discontinuing insulin and four held the weight for approximately a year and then lost it gradually during the subsequent year. Of the nineteen patients followed for three years, eleven maintained the gained weight, four lost it all within six months and four kept the weight for approximately one year and then lost it slowly over varying periods. Of the forty-three patients followed for from four to six years, twenty-six held the added weight, ten maintained the gain for from one to two years and then lost it during varying intervals and seven retained about half the gained weight. Ten of the patients, listed as maintaining their added weight, continued to gain after discontinuing insulin. Four patients became from 10 to 35 pounds (4.5 to 16 Kg.) overweight for their age, height and sex; one of them became definitely obese. In some patients there was a decrease in the sugar tolerance during the period of insulin treatment, but this returned to normal shortly after discontinuing insulin. There was no permanent impairment of the carbohydrate tolerance.

New York State Journal of Medicine, New York

38: 403-482 (March 15) 1938

Accurate Treatment of Bladder Tumors. T. J. Kirwin, New York.—p. 403.
Certain Recent Developments in Chemistry: Their Bearing on Cellular Activity. W. deB. MacNider, Chapel Hill, N. C.—p. 407.
Study of Appendicitis; 1,500 Cases at the New York Hospital. B. S. Ray, New York.—p. 412.
Relationship of Physical Therapy to Internal Medicine. J. Gutman, Brooklyn.—p. 424.
Congenital Scoliosis Due to Unusual Deformity of Vertebral Column. J. W. Ghormley, Albany.—p. 432.
Acute Pharyngeal Stenosis. R. S. Moore, Syracuse.—p. 434.
*Habitual Abortion: Treatment by Injection of Pregnancy Serum. S. S. Rosenfeld, New York.—p. 440.
Public Health: A Concern of the Government. S. J. Kopetzky, New York.—p. 444.

Habitual Abortion.—Rosenfeld has been treating twenty cases of habitual abortion with about 5 cc. of normal pregnancy serum injected intramuscularly once a week. Should staining or bleeding occur during the course of pregnancy, the patient is put to bed and doses up to 10 cc. may be given two or three times a week or even daily depending on the signs and symptoms. In the absence of bleeding, patients are permitted to pursue their normal routine and duties. The diet is that usually prescribed for a normal pregnant woman with the addition of cod liver oil and viosterol. Of the twenty patients, nineteen gave birth to normal living infants.

Philippine Islands Med. Association Journal, Manila

18: 59-124 (Feb.) 1938

*Unusual Types of Typhoid Infection. P. T. Lantin and S. B. Morales, Manila.—p. 59.
Goiter. H. A. Erickson, Manila.—p. 67.
Nondrainage in Acute Appendical Conditions. A. Y. Mandanas and A. Tangco, Manila.—p. 71.
False Labor Pains. R. R. Enrile, Pasay.—p. 75.
General Appraisal of Present Status of BCG Vaccine (Bacillus Calmette-Guérin). S. A. Francisco, Manila.—p. 83.

Unusual Types of Typhoid Infection.—Lantin and Morales cite three cases of typhoid in which no evidences of active or healed typhoid lesions were found in the intestine at necropsy. The clinical diagnosis of typhoid in case 1 was based principally on the persistent fever and the positive blood culture irrespective of the high leukocytosis. The diagnosis of typhoid was also made in case 2 because of the persistent high fever and two successive reports of positive blood culture. Case 3 is considered interesting only because of its comparative rarity for, as far as can be determined, it is the first case ever reported in the Philippines of typhoid meningitis occurring in the course of ordinary typhoid and confirmed by postmortem examination. Diagnosis of typhoid meningitis in this patient was based principally on clinical symptoms and signs of the disease, on the isolation of Bacillus typhosus from the purulent spinal fluid and on the purulent exudate from the meninges, made at necropsy, and further corroborated by the characteristic cellular observations in histologic sections of the brain and meninges.

Public Health Reports, Washington, D. C.

53: 363-404 (March 11) 1938

Prevalence of Trichinosis in the United States. W. Sawitz.—p. 365.
Study of Trichinella Spiralis in the Hawaiian Islands. J. E. Alicata.—p. 384.

53: 405-438 (March 18) 1938

History and Frequency of Clinical Scarlet Fever Cases and of Injections for Artificial Immunization Among 9,000 Families, Based on Nation-wide Periodic Canvasses, 1928-1931. S. D. Collins.—p. 409.

53: 439-484 (March 25) 1938

Validity of Health Service Data Gathered by the Family Survey Method. E. H. Pennell and Hazel O'Hara.—p. 439.
Study of Dental Care in Detroit, Mich. R. H. Britten.—p. 446.

Radiology, Syracuse, N. Y.

30: 277-406 (March) 1938

*Irradiation Sickness. C. L. Martin and W. H. Moursund Jr., Dallas, Texas.—p. 277.
Roentgenologic Aspect of Silicosis. E. C. Ernst, St. Louis.—p. 285.
Clinical Aspects of Silicosis. A. J. Lanza, New York.—p. 294.
Etiology of Silicosis. R. R. Sayers and R. R. Jones, Washington, D. C.—p. 297.
Further Observations on Roentgen Diagnosis of Coronary Disease. G. Levene, Boston.—p. 309.
Absorption of Ethylene Gas Following Encephalography, with Clinical Correlation in 164 Cases. R. B. Aird, San Francisco.—p. 320.
Situation of Radiology in Medical Education in the United States and Canada. E. P. Pendergrass, Philadelphia.—p. 337.
Three Year Results in Treatment of Malignant Neoplasms with Supervoltage Roentgen Therapy. T. Leucutia, Detroit.—p. 356.
Anomalies of Lumbosacral Spine. P. C. Williams, Dallas, Texas.—p. 361.
Study of Effect of Thorium Dioxide Sol Injected in Rabbits. C. R. Orr, G. D. Popoff, R. S. Rosedale and B. R. Stephenson, Buffalo.—p. 370.
*Peripheral Blood Phenomena and Differential Response of Bone Marrow and Lymph Nodes to Hyperpyrexia. C. A. Doan, Columbus, Ohio.—p. 382.
Roentgen Visualization of Cranial Nerves After Intracisternal Injection of Thorotrast. J. Q. Griffith Jr., P. J. Hodes and W. A. Jeffers, Philadelphia.—p. 390.

Irradiation Sickness.—Martin and Moursund believe that true irradiation sickness is in most instances produced by an interference with intestinal function, so they have searched for remedies capable of counteracting functional disturbances of the intestinal tract. Best results have been obtained from the intravenous administration of a liter of 5 or 10 per cent dextrose made up in physiologic solution of sodium chloride. This medication can be given repeatedly and is particularly helpful in the treatment of cases in which abdominal masses are producing partial intestinal obstruction. Holmes and Hunter believe that a high carbohydrate intake is helpful. Davis states that a lack of vitamin B_1 produces anorexia and degenerative changes in the intestinal tract. A series of animal experiments was carried out in an effort to show that thiamin chloride (crystalline vitamin B_1 hydrochloride) might be capable of producing protection against the lethal abdominal dose of x-rays. Although small animals could not be uniformly protected, large doses of thiamin chloride seemed to prolong definitely the lives of some of them. The substance was tried in clinical practice. The drug is given by mouth, and intramuscular injection is resorted to only when vomiting occurs. This form of medication not only reduced or completely abolished all nausea but enabled the patients to enjoy most of their meals and to maintain their nutrition even while receiving a long series of treatments over the abdomen. In many instances nausea and vomiting occurred during the first few days of treatment but completely disappeared during the remainder of the period, which often lasted for several weeks. It appears that several days is required for the body to become saturated with the substance. For this reason 2,000 international units is given daily for at least two days before treatment is started. This procedure has definitely minimized the symptoms observed during the early period. That saturation is necessary for relief is also indicated by the fact that, when vomiting occurs, it can frequently be relieved almost immediately by the intramuscular injection of 2,000 international units of thiamin chloride. The following routine for patients about to undergo heavy irradiation has been adopted: 1. A high carbohydrate diet is given. 2. Thiamin chloride 2,000 international units is given daily by mouth, beginning two days before the irradiation is started. 3. If vomiting occurs, 2,000 international units of thiamin chloride is given intramuscularly. 4. If relief does not occur within thirty minutes, 6 grains

(0.4 Gm.) of sodium amytal or an equal amount of another soluble barbituric acid derivative is given by rectum or a pentobarbital sodium suppository is inserted. 5. If vomiting persists, 1 liter of 5 per cent dextrose in physiologic solution of sodium chloride is given intravenously and repeated if necessary. As a rule, dextrose intravenously is needed only when some serious complication such as partial intestinal obstruction or abdominal infection is present.

Response of Bone Marrow and Lymph Nodes to Hyperpyrexia.—Doan made a study of the cellular reactions during hyperpyrexia induced by the hypertherm and fever induced by the intravenous inoculation of typhoid vaccine and by malaria inoculations. There is a rather constant hemopoietic response to "fever" and the majority of the cells making up the postfebrile leukocytosis are polymorphonuclear neutrophils newly delivered by the bone marrow. This part of the reaction may be nonspecific. There is a destruction of lymphocytes during hyperpyrexia. There is probably some destruction or redistribution of monocytes, as shown by a delayed monocytosis made up primarily of younger forms. The hemograms following malaria and Bacillus typhosus inoculations differ from those observed during fever induced by physical methods in the marked leukopenia during the chill, in the temporary disappearance of the monocyte from the circulation following typhoid and in the marked stimulation of the monocyte in malaria and its moderate stimulation following typhoid vaccine. The shift to the left in the neutrophilic granulocytes in malaria is noteworthy and the appearance of clasmatocytes in the peripheral blood has been observed with no other type of fever study. The profound stimulation of phagocytic clasmatocytes observed in malaria provides an important cellular defense weapon in the treatment of syphilis of the central nervous system, which is not available when other fevering methods are employed. While biopsy of the sternal marrow following hypertherm fever therapy did not show an increase in clasmatocytes, there was a tremendous increase in these phagocytic cells elsewhere in the tissues, more especially in lymph nodes, spleen and liver. To that extent, at least, artificial hyperthermia by physical means not only provides the thermal factor of importance for the inactivation of Spirochaeta pallida and the gonococcus but has now been demonstrated to exert a profound effect on the cellular equilibriums of the body.

Surgery, Gynecology and Obstetrics, Chicago

66: 563-690 (March) 1938

Effect of Subcutaneous Injections of Concentrated Spleen Extract on Mouse Sarcoma 180. R. Lewisohn, New York.—p. 563.
Malignant Adenoma of Thyroid: Local Recurrences in Veins of the Neck. A. Graham, Cleveland.—p. 577.
Studies on Circulation in Pregnancy: II. Vital Capacity Observations in Normal Pregnant Women. K. J. Thomson, Mount McGregor, N. Y., and M. E. Cohen, Boston.—p. 591.
Biliary Disease in Young Subjects. A. H. Potter, Springfield, Ohio.—p. 604.
*Visceral Metastasis from Rectal Carcinoma. C. E. Brown and S. Warren, Boston.—p. 611.
*Vitamin Oils in Treatment of Burns: Experimental Study. C. B. Puestow, H. G. Poncher and H. Hammatt, Chicago.—p. 622.
Relation of Catgut Sensitivity to Wound Healing. C. J. Kraissl, Beatrice M. Kesten and J. G. Cimiotti, New York.—p. 628.
Surgical Procedures for Biliary Calculi. E. C. Cutler and R. Zollinger, Boston.—p. 637.
Fractures of Neck of Femur: Critical Analysis of Fifty Consecutive Cases. M. Cleveland and D. M. Bosworth, New York.—p. 646.
Aseptic Ureterointestinal Anastomosis. J. I. Farrell and Y. Lyman, Evanston, Ill.—p. 657.
Spurs of the Os Calcis. A. Steindler and A. R. Smith, Iowa City.—p. 663.
Extent and Character of Peptic Ulcers and Gastroduodenitis in Different Countries. H. May, Philadelphia.—p. 666.
Advanced Extra-Uterine Pregnancy. M. A. Novey, Baltimore.—p. 671.
Anaerobic Infections Following Operations on Urinary Tract. W. H. Mencher and H. E. Leiter, New York.—p. 677.

Visceral Metastasis from Rectal Carcinoma.—From a study of 170 rectal carcinomas with complete postmortem observations, Brown and Warren attempt to evaluate the importance of invasion of the local blood vessels as compared with neoplastic lymph nodes in predicting the occurrence of visceral metastases. They observed also the influence of such factors as the histologic type, extent and location of the primary growth, duration of the disease, age and sex on the development of visceral metastases. This series represents only a portion of patients with rectal carcinoma treated in four hospitals over a period of ten years. The tendency of rectal carcinoma to metastasize by way of the blood stream varies in general with the degree of differentiation. Malignant adenoma produced visceral metastases in 23 per cent of the cases, adenocarcinoma in 49 per cent and carcinoma simplex in 56 per cent. Mucinous carcinoma has a marked tendency to metastasize by way of the lymphatics. The longer the duration of rectal carcinoma, the greater are the number of visceral metastases. There was a 5 per cent metastasis of rectal carcinoma to bone. The more the primary growth penetrates the intestinal wall, the greater are the chances of blood-borne metastasis. The reliability of prognosis of visceral metastases by observation of local intravascular invasion, and to a less extent by lymph node metastasis, increases with the duration of the disease. Visceral metastasis was observed in 41 per cent of the cases; 61 per cent showed local intravascular invasion and 67 per cent of these showed visceral metastases, closely paralleling the 66 per cent of visceral metastases with positive lymph nodes. Only one case of the seventy showing visceral metastases failed to show local intravascular invasion, whereas twenty-four of these cases failed to show positive lymph nodes; that is, 24 per cent of the patients with negative nodes had visceral metastases. Sections of the primary growth in rectal carcinoma should be scrutinized carefully for invasion of capillaries or veins by tumor, because intravascular invasion frequently means visceral metastases, and its absence, provided at least three sections from different parts of the growth are examined, nearly always rules out visceral metastasis. Its efficiency in predicting visceral or bone metastasis outranks that of neoplastic lymph nodes.

Vitamin Oils in Treatment of Burns.—Puestow and his associates produced controlled burns on pigs and rabbits and treated them with ointments containing varying amounts of vitamin A and vitamin D. The time and character of local wound healing was determined and compared with untreated controls and burns treated with tannic acid. Burns treated with 5 per cent fresh tannic acid solution healed in the same length of time as untreated controls of similar average size. The application of vitamin free olive oil ointment to slightly larger burns was followed by complete healing in the same length of time as the controls. Cod liver oil ointment shortened the period of healing by 25 per cent. Burns which averaged 50 per cent larger than the controls were treated with three high vitamin ointments: containing no vitamin A but high in vitamin D, having a low vitamin A to vitamin D ratio and having a high vitamin A to vitamin D ratio. The time of healing was approximately 25 per cent shorter than in the smaller control lesions and those treated with tannic acid. It was no longer than in the smaller lesions treated with cod liver oil ointment of low vitamin content. The response to the various high vitamin ointments employed was approximately the same. Histologic studies of the scars of all healed burns revealed no characteristic difference for the various therapeutic agents employed.

Texas State Journal of Medicine, Fort Worth

33: 727-790 (March) 1938

Halisteresis as a Medical Problem. W. W. Watkins, Phoenix, Ariz.—p. 732.
Transperitoneal Closure of Vesicovaginal Fistula. F. S. Schoonover Jr., Fort Worth.—p. 739.
Correlation of Roentgenologic Findings with Pathology of Bone Tumors. J. B. Johnson and W. J. Stork, Galveston.—p. 741.
Significant Endocrine Advances in Gynecology. D. M. Bush, Dallas.—p. 744.
Fibromyomas of Uterus. R. T. Goodwin, San Antonio.—p. 748.
Fungus Infections of Lungs. A. E. Greer, Houston.—p. 750.
Tumors of Larynx as Visualized by Suspension Laryngoscopy. F. E. LeJeune, New Orleans.—p. 756.
Conjunctival Granuloma with Adenopathy. V. R. Hurst, Longview.—p. 760.
*Old Tuberculin: When Useful. E. H. Cary, Dallas.—p. 762.
Osteomyelitis of Frontal Bones Complicating Frontal Sinusitis. R. M. Hargrove, Houston.—p. 767.
Sporotrichosis. C. T. Kennedy, Greenville.—p. 771.

Old Tuberculin.—Cary has frequently observed certain intra-ocular and extra-ocular lesions which responded to the intradermal use of old tuberculin. Occasionally a lesion of the middle ear, unresponsive to any local treatment, was cured promptly following intradermal injections of old tuberculin.

There are many inflammatory reactions difficult to classify which readily subside when old tuberculin is used. Lesions which respond favorably to old tuberculin do not occur in active tuberculosis. Persons who are allergic and who have developed this hypersensitivity from an early infection, which has been well circumscribed, need not be disturbed greatly by the cautious use of old tuberculin. The author uses one-fourth minim (0.016 cc.) of stock old tuberculin intradermally in the beginning and increases the quantity as needed.

Virginia Medical Monthly, Richmond

65: 123-186 (March) 1938

Some Modern Problems in Skin Cancer. C. A. Simpson, Washington, D. C., and F. A. Ellis, Baltimore.—p. 123.
Paroxysmal Hemoglobinuria: Report of Case. S. C. Hall Jr. and E. E. Barksdale, Danville.—p. 126.
Emotion-Reason Balance. B. R. Tucker, Richmond.—p. 128.
General Considerations in Diagnosis of Heart Disease. J. F. Waddill, Norfolk.—p. 131.
Treatment of Carcinoma of Cervix. R. H. Hoge, Richmond.—p. 136.
Observations of 100 Gonorrheal Infections Treated by Recent Methods. W. W. S. Butler, Roanoke.—p. 140.
Multiple Polyposis of Colon: Survey of Surgical Methods of Treatment and Report of Unusual Case. F. P. Coleman, Ann Arbor, Mich.—p. 144.
What Supportive Evidence Is There That Lymphopathia Venerea Is a Distinct Disease Entity? H. E. Bacon, Philadelphia.—p. 147.
Convenient Method for Fractionation of Liver Extracts and Preparation of Parenteral Anti-Pernicious Anemia Extract. J. C. Forbes and W. A. Peabody, Richmond.—p. 151.
Gun Powder Injury to the Eyes. L. B. Sheppard, Richmond.—p. 152.
Comparative Study of Etiologic Factors in Allergic and Psychopathologic Conditions. W. Marshall, Appleton, Wis., and J. S. Tarwater, Tuscaloosa, Ala.—p. 154.
Ulcers of Anorectal Region. M. Silbermann, Boston.—p. 162.
Premature Twins: Identical. V. E. Lascara, Norfolk.—p. 165.

65: 187-250 (April) 1938

Advances in Treatment of Pelvic Inflammation. C. R. Robins, Richmond.—p. 187.
Early Recognition and Management of Neurosyphilis. J. King, Radford.—p. 190.
Stone in Urinary Tract: Present Concepts of Etiology and Preventive Therapy Against Recurrence. L. D. Keyser, Roanoke.—p. 195.
Appendicitis: Its Diagnosis and Improved Methods of Treatment. J. S. Horsley, J. S. Horsley Jr. and G. W. Horsley, Richmond.—p. 207.
Some Observations on My Eight Years' Experience in a Modern Mental Hospital. A. D. Hutton, Marion.—p. 213.
*Report of Fifteen Underweight Cases Treated with Insulin and Diets. J. T. N. McCastor and Mary Cousins McCastor, New York.—p. 216.
Treatment of Congestive Heart Failure. P. D. Camp, Richmond.—p. 221.
Value of Gastroscopy. F. A. J. Geier, Washington, D. C.—p. 225.
Atrophic Cirrhosis of Liver: Case Report. E. R. Moorman, Kilmarnock.—p. 227.
Acute Staphylococcic Osteomyelitis and Staphylococcemia Treated with Staphylococcus Antitoxin and Prompt Surgical Drainage: Case. J. E. Jacobs and W. R. Haas, Durham, N. C.—p. 231.
Air Embolism or Pleural Shock: Report of Two Cases. G. S. Hartley and F. H. Yorkoff, Clifton Forge, Va.—p. 234.

Underweight Patients Treated with Insulin.—The McCastors treated fifteen underweight adult patients with insulin plus high caloric diets combined with vitamins. The typical patient in this group presented the picture of malnutrition—the long asthenic type with visceroptosis and anemia. Gastrointestinal symptoms were most prevalent; nausea, constipation, flatulence, dizzy spells, lethargy, vague back and leg pains were listed by some of the group. Anorexia also was a common symptom, while others simply could not gain weight in spite of good appetites. All had tried various plans for gaining weight. The initial dose of insulin was from 5 to 30 units two or three times daily. Some who were employed found it impossible to take the midday injection. Each patient was given a diet sheet with instructions to keep a food diary. Additional vitamins also were given. The activities of the patients were in no way curtailed. The increase in weight varied from 4 pounds (1.8 Kg.) in two days to 18 pounds (8 Kg.) in twenty-two days. Striking changes were displayed in the patients in from three to five days after the initiation of treatment. The hypochondriac was no longer conscious of his "heart pain," backache and fits of depression. Reactions were both local and general. Four patients at about 11 a. m. experienced subjective symptoms of nervousness and dizziness with a slight degree of nausea. This was soon eliminated by the taking of sugar at 10 a. m. All but two of the patients were candidates for various civil service appointments for which weights were specified.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

11: 129-200 (March) 1938

Biologic Action of X-Rays: Theoretical Review. J. A. Crowther.—p. 132.
Reaction of Bones of Skull to Intracranial Lesions. M. H. Jupe.—p. 146.
Developmental Abbreviation of Terminal Phalanges. H. J. Burrows.—p. 165.
Wavelength as Factor in Radiotherapy. G. F. Stebbing.—p. 177.
*Regional X-Ray Baths in Treatment of Lymphadenoma. W. M. Levitt.—p. 183.
Small Flexible 2 Gm. Radium Unit, with Arrangements for Removal of 1 Gm. in Form of Applicator. C. W. Wilson and N. H. Pierce.—p. 189.

Regional Irradiation in Treatment of Lymphadenoma.—Levitt considers the third stage of lymphadenoma (multiple lesions with visceral involvement and advancing cachexia) and its treatment by wide regional irradiation (roentgen bath) which has been in use at St. Bartholomew's Hospital for ten years. If precautions are observed, doses of x-rays can be applied with safety to extensive regions of the body, e. g., the whole abdomen or the whole chest, which are comparable with the doses ordinarily given to localized lesions. The method is applicable to the treatment of lymphadenoma and of radiosensitive malignant neoplasms such as seminoma. The thoracic bath is indicated in cases in which the disease involves the mediastinum and lung fields, with or without axillary and cervical glands, or the mediastinal and axillary, with or without cervical glands. Masses in the abdomen without known thoracic involvement require an abdominal roentgen bath. The trunk bath is not without danger, and at present it is being used only in selected cases of both thoracic and abdominal disease in which the general condition of the patient has not deteriorated too far. High voltage rays are used with four oblique fields, overlapping completely. The focus skin distance must be sufficient to cover fully the area exposed. The patient is carefully protected by lead rubber from radiation above the upper limit and below the lower limit of the fields to be exposed. The whole section of the patient is exposed to the beam in each case. Treatment is begun with small doses, which are gradually increased until the patient is taking daily doses to large sections of the body. In the thoracic bath the two anterior oblique fields are applied with the patient in the supine position and the two posterior fields in the prone position. Treatment is begun with thirty-five surface roentgens to one field. The fields are treated in turn day by day, and the dosage is increased cautiously until the patient is taking as much as 200 roentgens to this enormous field in a day. Blood counts are carried out about every five days and, in the absence of a contraindication, treatment is continued until a dose of 1,000 roentgens has been applied to each field over a period of about a month. The blood counts show a steady fall in leukocytes with the incidence on the lymphocytes as the treatment progresses, but it is only when the total leukocyte count falls to 1,200 or the lymphocytes to 200 that this is regarded as a contraindication to the continuance of the treatment. In the abdominal bath the upper limit is at the level of the ensiform cartilage and the lower includes the groin gland areas. Treatment is begun with twenty-five surface roentgens and may be increased gradually to about 150 surface roentgens. The total dosage is, as in the thoracic bath, about 1,000 surface roentgens to each field. In the trunk bath the field extends from the mandible down to below the groin gland areas, the limbs being very carefully protected. Treatment is begun with twenty surface roentgen doses and increased to as much as 125 surface roentgens daily. Total dosage is from 600 to 750 surface roentgens to each field. In addition to the fall in leukocytes, hemorrhages and petechiae on the limbs are indications for the immediate cessation of the treatment. Recovery can occur after the stage of hemorrhages and petechiae has been reached. Results are good in the thoracic and abdominal baths, in the sense that superficial and deep masses in the regions treated disappear, cachexia is relieved and the patient returns often to an apparently normal state of health and to his work. The most remarkable results are obtained in the trunk baths. Of seven consecutive patients who

were given trunk baths in 1932, 1933 and 1934, three are alive and well, some having had intermediate treatment. Two died as a direct result of the treatment. Five had lymphadenoma, one a seminoma and one a sensitive ovarian tumor. These methods of treatment, in the case of the regional baths, are safe and valuable, but the trunk bath is dangerous and still under trial. Its use is justified only in hopeless cases.

British Medical Journal, London

1: 433-498 (Feb. 26) 1938

Trauma of the Heart. H. Barber.—p. 433.
Changes in Liver of Male Rats After Castration and Injections of Sexual Hormones. Kathleen Hall and V. Korenchevsky.—p. 438.
Scapulohumeral Periarthritis (Duplay's Disease). A. H. Douthwaite.—p. 441.
Study of Miners' Nystagmus. R. S. Brock.—p. 443.
Manipulative Treatment of Intestinal Spasm. J. H. Cyriax.—p. 445.
Chronic Littritis. R. C. Webster.—p. 448.

1: 499-550 (March 5) 1938

Pregnancy and Lactation Changes in Fibro-Adenoma of the Breast. C. F. Geschickter and D. Lewis.—p. 499.
Pneumonitis. A. M. Gill.—p. 504.
Spontaneous Disappearance of Carcinoma. D. Chamberlain.—p. 508.
The Plantar Wart: Verruca Plantaris; Verruca Pedis; Plantar Papilloma. R. M. B. MacKenna.—p. 509.
Intrathecal Alcohol Injection for Relief of Pain: A Review. Constance Ottley.—p. 510.
Effect of Iron Administration in Cases of Subnutrition. E. Blackstock and J. M. Ritchie.—p. 512.

Irish Journal of Medical Science, Dublin

No. **147:** 97-144 (March) 1938

Functional Nerve Disorders in Ireland: Scheme for Their Consideration and Treatment. J. P. F. Waters.—p. 97.
Vaccine Treatment of Pneumonia in Childhood. J. Mowbray.—p. 105.
The Thymus Myth. T. G. Wilson.—p. 113.
Surgical Visit to Berlin and Bruges. F. J. Henry.—p. 118.
Obstetric Shock. J. K. Feeney.—p. 121.

Journal of Tropical Medicine and Hygiene, London

41: 69-88 (March 1) 1938

Pathologic Lesions in Australian Aborigines, Central Australia (Granites) and Flinders Range. E. C. Black and J. B. Cleland.—p. 69.

Lancet, London

1: 417-478 (Feb. 19) 1938

Pulmonary Tuberculosis: Relation of Childhood Infection to Disease in Adults. A. Wallgren.—p. 417.
*Gastric Lesion in Pernicious Anemia. H. A. Magnus and C. C. Ungley.—p. 420.
Alcoholic Labyrinthine Injection Through Oval Window in Treatment of Aural Vertigo. R. Peacock.—p. 421.
Arteritis of Temporal Vessels. G. H. Jennings.—p. 424.
Leiomyoma of Stomach. B. R. Sworn and T. V. Cooper.—p. 428.
*Surgical Treatment of Bell's Palsy. W. M. Morris.—p. 429.
Action of Curarine on Respiration. R. West.—p. 432.

The Gastric Lesion in Pernicious Anemia.—Magnus and Ungley examined the stomach in seven cases of pernicious anemia. Macroscopically the upper two thirds of the stomach showed such atrophy that this area was reduced to the thinness of parchment. At the junction of the body with the pyloric mucosa, however, there was a transition, usually abrupt, to the normal thickness of the wall of the stomach and this was maintained throughout the whole of the pyloric antrum and duodenum. The mucosal surface in the upper atrophic region was flattened and a normal gastric mucosa could no longer be seen, while in the pyloric region the mucosal surface was normal. These appearances are so characteristic that it is possible to recognize the stomach from a case of pernicious anemia by naked-eye examination. Microscopic examination confirmed the naked-eye distribution of the atrophy. In the mucosal region there was atrophy involving all the coats of the wall of the stomach. In the mucosa all that remained was the surface epithelium and a few scattered glands, while the specialized oxyntic and peptic cells disappeared entirely. Yet there was absence of fibrosis, cellular infiltration, obliterative endarteritis or other evidence of past inflammation; there was a corresponding absence of fibrosis in the submucosa and subserosa. The muscular coat showed atrophy, but here also fibrosis was absent. In all seven stomachs there was no suggestion of atrophy or of an inflammatory lesion in the pyloric or duodenal mucosa; Brunner's glands also showed no abnormality. It has been generally assumed that the gastric lesion in pernicious anemia is the end result of an inflammatory gastritis, but their material indicates to the authors that this is not so. The gastric lesion is to be regarded as an atrophic process, the cause of which is not yet known but which may be the end result of some endocrine or nutritional deficiency or may even be congenital. From its nature it is unlikely that regeneration to a normal gastric mucosa ever occurs.

Surgical Treatment of Bell's Palsy.—Morris believes that a period of from six weeks to two months is the limit of time a case of Bell's palsy should be treated expectantly, when there is no evidence of voluntary movement of the facial muscles. If faradic response is lost, or the reaction of degeneration can be obtained before this, the sooner decompression of the nerve is carried out the more chance has the patient of complete recovery. When a paralysis has been treated expectantly with some recovery and then comes to a standstill, further improvement may be anticipated by decompression and, in the cases of longer duration, introduction of an "inlaid graft," which by chemotaxis will stimulate the existing active fibers of the nerve. The operation should not be attempted in any case in which the presence of muscular tissue cannot be demonstrated. In the twelve cases discussed there has been recovery, complete in the early ones and partial in the long-standing ones.

Medical Journal of Australia, Sydney

1: 321-364 (Feb. 19) 1938

Development of Study of History of Medicine. L. Cowlishaw.—p. 321.
Retina of the Australian Mammal. K. O'Day.—p. 326.
Some Results Achieved by Tuberculin Therapy. L. Elwell.—p. 328.
Tennis Elbow. E. F. West.—p. 330.
Is the Hospital Treatment of Scarlet Fever Worth While? F. V. Scholes.—p. 331.
Common Skin Diseases Met with in General Practice. L. W. Linn.—p. 335.
Coming of Medicine to Tasmania: Some Early Medical Men and Their Environment. W. E. L. Crowther.—p. 340.
Relation of Myasthenia Gravis and Allied Conditions to "Prostigmine" Therapy. L. B. Cox.—p. 344.
*Copper Sulfate Treatment of Tropical Ulcer and New Guinea Mouth Disease. C. E. M. Gunther.—p. 348.

1: 365-416 (Feb. 26) 1938

Attempt to Immunize Lambs Against Hydatid Disease. H. B. Penfold.—p. 375.
Indications for Splenectomy in Pediatric Practice. L. Dods.—p. 377.

Copper Sulfate Treatment of Tropical Ulcer.—Gunther states that tropical ulcer and New Guinea mouth disease differ only as to the site of occurrence; each is fundamentally due to food deficiency, each presents a foul, sloughing ulcer, from each a spirochete and a fusiform bacillus can be isolated and each responds to the same form of treatment. The two conditions are almost entirely confined to natives. The first essential in general treatment is a diet rich in vitamins. The patients are not given rice but receive abundance of fresh vegetables; an autolyzed yeast preparation and cod liver oil are added. In local treatment copper sulfate acts with such rapidity in comparison with other forms of treatment that it can be regarded as specific. It is best used as a solution of 1 in 150 approximately. It is applied as a wet compress to ulcers and employed as a mouth wash in New Guinea mouth disease and as a continuous bath for tropical ulcer. No ill effects have been observed from its use.

South African Medical Journal, Cape Town

12: 111-154 (Feb. 26) 1938

Conservative Gynecologic Surgery. V. Bonney.—p. 113.
A Visit to the Cleveland Clinic. W. P. Steenkamp.—p 118.
Diseases of the Blood in Practice. C. D. Brink.—p. 119.
Treatment of Renal Calculi, with Especial Reference to Their Solution by the Aid of Diet and Drugs. V. Vermooten.—p. 127.
*Kidney Growths in the Upper Pole: An Early Diagnostic Sign. R. C. Begg.—p. 131.

Kidney Tumors in the Upper Pole.—Begg states that dilatation of the subcostal vein alone is an early sign that tumor of the upper pole exists. This dilatation arises from the peculiar anatomic position of that structure. The subcostal vein passes in front of the quadratus lying between it and the kidney. It is thus a posterior relation of the upper part of the organ. The sign is thus the more valuable, as tumors of the upper pole may reach a considerable size before either they or the lower

pole of the kidney itself are palpable. This dilatation may be little marked and may be perceptible only by comparison with the other side. It is most obvious after the patient has been standing or walking for a while before the examination. It appears either in the form of a linear vein like a blue pencil mark passing obliquely upward and outward between the anterior superior spine of the ilium and the umbilicus—nearer the former than the latter—or as a distinct tracery of small veins at the outer border of the rectus muscle 2 inches above the level of the upper margin of the symphysis pubis. If distinct unilateral dilatation confined to the radicles of the subcostal vein is seen, pathologic changes of the upper pole of the corresponding kidney must be considered and investigation carried out. When renal tumor is suspected because of hematuria or bony metastases of unknown origin, the sign helps to indicate the side affected and should be taken into account when the pyelogram is inconclusive.

Tubercle, London

19: 241-288 (March) 1938

*Incidence and Prevention of Tuberculosis in American Schools and Colleges. E. R. Long.—p. 241.
Phrenicectomy in Treatment of Pulmonary Tuberculosis. P. W. Edwards and J. S. T. Stevens.—p. 252.
Two Examples of Localized Bronchiectasis. A. S. Hall.—p. 278.

Tuberculosis in American Colleges.—Long states that studies continued over a decade indicate that the proportion of elementary and high school children positive to the tuberculin test is steadily falling. In the less crowded communities the drop is more striking than in large, congested cities. The incidence in rural communities is generally significantly lower than in urban areas, and differences within the same community are always found corresponding to the economic level. Important tuberculous disease is first encountered in an appreciable extent in high school students, where the combined incidence of latent and manifest disease varies from 1.5 to nearly 3 per cent, being higher among girls. Important disease demanding care occurs in from 0.5 to 1 per cent of these children. Active programs for the early detection and control of tuberculosis in schools now operate throughout the country. The basic principles of these programs are mass tuberculin testing, x-ray examination of the positive reactors and provision of suitable care for those found to have lesions. In the colleges about six students per thousand have tuberculosis of the adult type. The average incidence of infection for the country as a whole is from 30 to 35 per cent. A marked variation occurs geographically, students from the great central portion of the country having a relatively low incidence. Tuberculosis is recognized as the most serious disease of the college period yet as insidious in onset, requiring routine mass-measures for its detection. Most of the lesions now discovered are in the minimal stage. Students of medicine and nursing are now known to be subject to a special hazard. The danger for medical students seems greatest during the third and fourth, or clinical, years, suggesting that tuberculosis acquired in the medical school is usually exogenous. Most nurses who are tuberculin negative on beginning training become positive to tuberculin during their course. The incidence of clinical tuberculosis is also proportionately high as compared with other professional or working groups at the same age, both during the period of training and in the first years after qualification.

Chinese Medical Journal, Peiping

53: 1-108 (Jan.) 1938

Adamantinoma: Clinical Study of Twenty-Six Cases. H. T. Kinm and A. F. Baranoff.—p. 1.
Alkalosis and Alkaline Treatment of Peptic Ulcer. K. C. Wang.—p. 23.
Spinal Anesthesia in China (1931-1935): Review of 11,118 Cases. M. T. Yang.—p. 37.
Infections Observed in Experimental Animals Fed on Certain Unbalanced Diets. H. C. Hou.—p. 47.
Anomalous Pyramidal Decussation in the Chinese. T. W. Chang.—p. 53.
Carcinoma of Esophagus: Report of Fifty-Nine Cases. K. C. Lang.—p. 57.
Carcinoma of Middle Ear and Its Treatment: Report of Case. T. P. Chou.—p. 64.
Malignancy of Nasopharynx and Eustachian Tube. A. M. Dunlap.—p. 68.
Rheumatic Fever Treated with Vitamin C: Case. F. H. Mosse.—p. 72.

Bulletin Médical, Paris

52: 217-234 (March 26) 1938

*Icterus by Choledochitis. M. Brulé.—p. 217.
Cholalemia Without Icterus. E. Chabrol, A. Busson, J. Cottet and A. Mathivat.—p. 222.
Edemas in Patients with Hepatic Disorders. A. Lemaire.—p. 225.
Preicteric Migraine. J. Caroli.—p. 230.

Icterus Produced by Choledochitis.—Brulé points out that, whereas the majority of the infectious forms of icterus are diseases of the liver and not of the biliary tract, there are cases in which an inflammatory obstruction of the choledochus is the causal factor. An essential symptom of this form of icterus is a considerable enlargement of the liver. This hepatomegaly is often accompanied by splenomegaly, but there is no sign of enlargement of the gallbladder. The author points out further that the icterus produced by choledochitis is observed especially in persons between 25 and 30 years of age, but it has been observed also in children and in aged persons. It seems to be especially frequent in males. The onset may resemble that of catarrhal icterus with a preicteric period of gastrointestinal disturbances, with pains in the right hypochondrium and perhaps with articular and muscular pains; but it may also appear insidiously, like cancer of the pancreas. The duration varies; whereas the primary choledochitis yields quickly to duodenal tubage, in the majority of patients, who have been icteric long before the first tubage, the disorder remains for a long time. After commenting on the origin and reporting a case, the author emphasizes that the icterus by choledochitis is much less frequent than the icterus by hepatitis. Nevertheless, in spite of the relative rarity, it is important that the possibility of a choledochitis be taken into consideration in cases of icterus that are accompanied by progressive hepatomegaly, for treatment may be effected rapidly by means of duodenal tubage. The author believes with F. Ramond that the intraduodenal administration of solution of magnesium sulfate or of olive oil (he always employs the two successively) provokes an aspiration by successive contraction and relaxation of the duodenum, thus draining the choledochus. In the cases in which treatment is begun early a single tubage may be adequate, but in cases of greater duration repetitions may be necessary.

Gynécologie et Obstétrique, Paris

37: 161-240 (March) 1938. Partial Index

Cancerization of Cervical Stump After Subtotal Hysterectomy. G. Cotte and A. Notter.—p. 161.
Contradictory Appearing Results of Biologic Pregnancy Reaction, Observed in Case of Chorionepithelioma. R. Keller and J. Limpach.—p. 168.
*Transfusion of Placental Blood Employed Before and After Gynecologic Operations in Maternity Hospital in Strasbourg. R. Keller and J. Limpach.—p. 173.
*Therapeutic Value of Injections of Estrogen in Undesirable Lacteal Production. J. Adrian.—p. 178.
*Determination of Quantity of Estrogenic Hormone in Women: Criticism of Results and Study of New Test. A. Durupt.—p. 183.
*Diagnostic Value of Capillaroscopy in Pregnancy and in Puerperal Sepsis. S. M. Melhard.—p. 200.

Transfusions of Placental Blood.—Keller and Limpach point out that in obstetrics blood transfusion is the method of choice in the treatment of the profuse hemorrhages. In gynecology they utilize its hemostatic effect in metrorrhagia and in the oozing of blood after operation. Leriche demonstrated that blood transfusions are helpful in the prophylaxis of postoperative complications and that transfused patients are better able to cope with the risks involved in all interventions. Since it was difficult to secure donors, they resorted to the use of placental blood, which they were able to obtain in their obstetric service. Placental blood has a high content in erythrocytes, leukocytes and hemoglobin. Of course the placental blood should be derived from healthy parturient women. After the child is born, the umbilical cord is grasped with a sterile forceps, cut and carefully disinfected. The first few drops of blood are placed in a test tube containing a solution of potassium oxalate (potassium oxalate, sodium chloride and water). This mixture is centrifuged and conserved to test the compatibility. Then the placental blood is collected in a glass container, previously rinsed with 5 cc. of a 10 per cent solution of sodium citrate. While the blood is flowing, the container is shaken mildly. The average amount of placental blood obtained after each delivery is from 60 to 90 Gm. The

blood is stored at a temperature of 2 C. and is utilized within thirty-six hours. From 4 to 5 cc. of blood is withdrawn from the patient who is to receive the transfusion. Following centrifugation, two drops of the serum of the recipient is mixed with one drop of the donor's blood that had been collected in the test tube with the sodium citrate. The mixture is observed for from five to ten minutes and the macroscopic observation is followed by microscopic control. If there is no sign of agglutination, the transfusion can be made. The container with the blood is placed for a time in a water bath at 38 C. Then the blood is filtered through three thicknesses of sterile gauze into a graduated cylinder that has been rinsed with physiologic solution. Then the blood is introduced into the vein of the recipient. This method of indirect transfusion has proved entirely satisfactory.

Estrogen in Undesirable Lactation.—Adrian resorted to the treatment with estrogen, with the exclusion of all other therapeutic measures, in all cases in which an inhibiting treatment of the mammary secretion was justified, such as in cases of pulmonary tuberculosis, in cardiac defects of the mother, in stillbirth or in early death of the infant. In some cases three injections of 20,000 international units are required; in other cases a single injection of this quantity is sufficient. This treatment proved successful in 57 per cent of 100 cases. In the other 43 per cent the results were insufficient in that the secretion with expression of the breast persisted after the treatment. However, the result was nevertheless considerable in that the painful tension in the breasts, as well as the spontaneous secretion, ceased.

Determination of Estrogenic Hormone in Women.—Durupt shows that the present methods of determination of the estrogenic hormone in blood and urine are based on the phenomenon of Allen and Doisy; namely, the production of estrus in castrated rats. Estrus is ascertained in the vaginal secretion, which reveals the presence of keratinized cells, owing to the desquamation of the uterine mucosa. The smallest quantity of hormone capable of causing the appearance of keratinized cells in the vaginal fluid of the castrated rat represents a rat unit of the estrogenic substance. The technic appears simple but in reality is complex and inexact. Since the response of different races of rats differs, it is essential to use one identical race stabilized by consanguinity. Individual sensitivity of the animals plays a part. This is influenced by the time of castration, by the food and so on. Reading the results of the Allen-Doisy test and the method of extraction are further sources of error. In his investigations the author employed instead of the inexact rat or mouse units the international unit, the weight of which corresponds to 0.1 microgram. As test animal he uses the impuberal mouse as is done in the Doisy-Curtis test. He found that the test of Doisy and Curtis is as sensitive as the Allen-Doisy test that is made on castrated mice and five times more sensitive than that made on castrated rats. It appears with aqueous solutions in three daily injections of 0.5 cc. containing 0.17 microgram of estrogen and with oily solutions of 0.25 cc. injected at once and containing 0.25 microgram. The test is done by simply opening the vagina. The presence of oozing with whatever cellular desquamation exceeds the threshold of reaction. To compare the results obtained with the test of Doisy and Curtis with those recorded in the author's table it is necessary that the condition under which the determinations are made are similar to those adopted by him, that is to say, employing aqueous solutions, three equal injections at twenty-four hour intervals with a quantity of 0.5 cc. each and with an oily solvent employing 0.25 cc. and only a single injection.

Diagnostic Value of Capillaroscopy in Pregnancy.—Following a review of the literature on the condition of the capillaries during pregnancy and puerperal sepsis, Melbard reports his studies comprising 358 examinations, of which 118 were made on sixty-seven pregnant women between the second and ninth months. Of these, thirty-four were examined also during the puerperal period, which took a normal course. The 240 other examinations were made on patients with puerperal complications. Some of these were under observation for three months, the majority for from one and a half to two months. During this time they were subjected to capillaroscopy up to nine times. In summarizing, the author says an augmentation of the capillaries can be found in two thirds of all pregnant women. It may be clearly visible from the second month of the pregnancy and may persist until delivery. The augmentation of the number of capillary loops became visible in 16 per cent of the cases examined by the author. The morphology of the capillaries is influenced by the sympathetic nervous system, by the endocrine system and by the products of the increased metabolism which is characteristic of the organism during pregnancy. However, it is necessary to take into consideration also diseases of the heart, of the kidneys, sclerotic processes and so on. In puerperal sepsis the capillary alterations are not merely of a functional character but in the majority of cases are of an anatomic nature. These anatomic alterations of the capillary system may be designated as peripheral endarteritis. In the grave septic puerperal complications the capillaries often remain dilated until general improvement of the patient occurs. The morphology as well as the functional aspects of the capillaries have considerable diagnostic and prognostic value in pregnancy as well as in puerperal sepsis.

Journal de Médecine de Lyon

19: 171-210 (March 20) 1938

Ocular Complications of Mumps. M. P. Bonnet.—p. 171.
Uveoparotitis (Syndrome of Heerfordt): Its Relations with Disease of Besnier-Boeck-Schaumann. P. Bonnet and L. Paufique.—p. 183.
*Ocular Manifestations of Malignant Endocarditis with Slow Evolution. P. Bonnet and G. Bonamour.—p. 191.

Ocular Manifestations of Malignant Endocarditis.—Bonnet and Bonamour say that malignant endocarditis with slow evolution, appearing as a primary septicemia grafted on old valvular lesions, can manifest itself in exceptional cases by a sudden dramatic visual disturbance, a unilateral amaurosis caused by embolism of the central artery of the retina. In the evolution of malignant endocarditis, when attention is not called to the eye by any functional trouble, the systematic examination of the fundus reveals in 40 per cent of the cases retinal changes of great value for the diagnosis of the disease. The retinitis of Roth—hemorrhages with white centers, roundish or ovular, of navicular form, clearly outlined, and white spots without hemorrhage—seemingly represent the most characteristic change in the chronic form of malignant endocarditis with slow evolution. These hemorrhages appear rapidly in several hours, becoming obliterated and reappearing in other places. These are probably the foci of necrosis limited to the retina at the level of the microbic colonies disseminated by the blood stream in the layer of the nervous fibers. More massive hemorrhages with white central foci may also be observed in front of the vessels in a diffuse edematous process of the retina. It is not exceptional to observe forms which by their association with the changes in the uveal tract and their inflammatory character permit septic retinitis to be considered as an attenuated form of metastatic ophthalmia. The observation of retinal changes remains, although less than was formerly asserted by Litten, a sign of an unfavorable prognosis, quite often the indication of an early fatal outcome.

Presse Médicale, Paris

46: 505-528 (April 2) 1938

Law of Stokes in Venous Pathology. C. Laubry and J. Louvel.—p. 505.
Accidents of Sensory and Motor Nerves Developing in Course of Treatment by Emetine Hydrochloride. P. Hillemand, A. Plichet and J. Charlot.—p. 507.
*Histamine as Chemical Transmitter. A. Gajdos.—p. 509.

Histamine as Chemical Transmitter.—Gajdos says that among the numerous physiopathologic problems raised by the research on histamine there are two which are of especial practical interest: the analgesic action of this substance and its role in the hyperergic diseases. The author reviews the observations of other investigators on the action of histamine and cites his own studies. He arrives at the conclusion that histamine can be considered as a specific chemical intermediary between the variability of causes and the identity of the reactions of the organism. Thus histamine constitutes one of those substances the introduction of which into a morbid process, between the cause and the effect, gives to the pathogenesis a new orientation which can perhaps be compared with the notion of chemical transmitters in normal physiology; namely, with epinephrine as the transmitter of sympathetic excitation and with choline as transmitter of parasympathetic excitation.

Ginecologia, Turin

4: 49-126 (Feb.) 1938

*Pathogenesis and Therapy of Anemia in Pregnancy: Especial Reference to Role and Effect of Feeding. T. M. Caffaratto.—p. 49.
Efficacy of Parenteral Administration of Some Hemopoietic Substances in Prevention of Hypochromic Anemia in Pregnancy. T. M. Caffaratto. —p. 101.
Existence of Substance which Stimulates Permeability of Tissues (R Factor) in Placenta, Amniotic Fluid, Blood of Mother and Fetus and Urine of Pregnant Women. G. Lucchetti.—p. 110.

Hypochromic Anemia in Pregnancy.—Caffaratto states that the number of erythrocytes and the amount of hemoglobin are diminished in normal pregnancy, especially during the last months. When the changes of the crasis of the blood are slight, they constitute a simple form of physiologic hydremic anemia which may evolve to hypochromic anemia. Hypochromic anemia in pregnancy originates mainly in the following factors: the derivation of iron from the body by the fetus, hypochlorhydria (in grave cases), a deficient supply of iron in food and an increased elimination of iron through the feces and urine. Common hypochromic anemia in pregnancy is more frequent in women who are in moderate economic circumstances than in those of better living conditions. Administration of small doses of iron with the ordinary diet or a diet which contains a sufficient quantity of iron to supply the patient with a daily amount of about 0.04 Gm. is of value in preventing hypochromic anemia. The preventive treatment should be administered from the fourth month of pregnancy up to its completion. In hypochromic anemia it is advisable to give iron in large doses and a diet rich in iron but well balanced in proteins, fats and carbohydrates. The following daily doses of iron are in general use: from 2 to 10 Gm. of reduced iron, 1 to 3 Gm. of iron sulfate, 6 Gm. of iron and ammonium citrate, 2 to 3 Gm. of iron protoxalate or 0.6 to 1.6 Gm. of iron hydrochloride. A diet with predominance of proteins over carbohydrates and fats lowers the amount of hemoglobin, which remains unchanged when fats are in predominance and increases when carbohydrates predominate. The variations for assimilation of iron from food depend on the quality of iron and on the individual capacity of absorption. Iron contained in carbohydrates is more easily assimilated than that of fats and proteins.

Haematologica Archivio, Pavia

19: 75-169 (No. 2) 1938

Anatomic Considerations on Tuberculosis of Spleen with Especial Reference to Tuberculous Splenomegaly. C. Fittipaldi.—p. 75.
*New Conception of Morphology of Erythrocytes and of Structure of Blood. G. Triolo.—p. 111.
Hyperplastic Follicular Lymphopathy. A. Fieschi.—p. 145.

Morphology of Erythrocytes and Structure of Blood.—Triolo studied the blood in the blood vessels in the mesentery of guinea pigs and also in emulsions of beef fat in oil of almonds, lipoids, liquids of fixation and bile. In all cases he found that erythrocytes are spheres entirely filled with plasma which roll through the blood vessels in close contact. They modify their form in passing through the capillaries but regain it as soon as they have passed. Plasma in the free state does not exist in the vessels unless there are discoid or bell-like erythrocytes, which shows that discoid and bell-like erythrocytes are altered erythrocytes which eliminate plasma. Coagulation takes place by elimination of plasma by trauma on the erythrocytes. The separation of blood into blood serum and clot can be prevented for more than three months when trauma, during the process of collecting blood, is prevented.

Riforma Medica, Naples

54: 331-368 (March 5) 1938

Transient Alkaptonuria: Clinical Study. F. Schiappoli.—p. 331.
*Ucko's Test for Function of Liver in Diseases of the Skin. M. Bronzini. —p. 337.
Action of Staphylococcic Anatoxin Applied Locally on Infected Wounds and Inflammatory Foci. C. Tangari.—p. 343.

Ucko's Liver Function Test in Diseases of the Skin.—Bronzini states that there is a relation between dysfunction of the liver and disease of the skin, especially eczema. The author describes the clinical picture of migration, congestion, acute yellow atrophy, suppuration, cirrhosis, cancer, echinococcosis and syphilis of the liver and discusses the diagnostic value of certain tests for function of the liver with especial reference to Ucko's test. The technic of Ucko's test has been described in the literature and recently in an abstract in THE JOURNAL (April 9, p. 1238). He obtained positive results of Ucko's test for function of the liver in thirty-two of 100 patients with various clinical forms of eczema. The more serious the cutaneous disease the more intense the results of the test. A treatment administered with the aim of controlling the disturbance of the liver induced great improvement or complete recovery of eczema in the cases reported by the author. He shows the advisability of performing Ucko's test in eczema and of administering a treatment in accordance with the results of the test.

54: 369-408 (March 12) 1938

Intradermal Staphylococcic Vaccine in Therapy of Herpes Zoster. A. Versari.—p. 371.
Rare Case of Acute Scurvy. G. Giancola.—p. 379.
*Method for Rapid Lowering of Azotemia of Mean Intensity. M. Pompili. —p. 385.

Method for Rapid Lowering of Azotemia.—Pompili emphasizes the diagnostic and prognostic significance of azotemia in the course of surgical diseases of the urinary tract. The method described by the author consists in the administration of a low protein diet with abstinence from meat and eggs but liberal amounts of greens and fruit, raw liver and small quantities of milk and diuretic beverages. If tests show dysfunction of the liver, it is advisable to give intramuscular injections of from 0.1 to 0.2 Gm. of liver extract in solution or intravenous injections of sodium dehydrocholate. The patient receives also 10 or 15 units daily of insulin, which is given fifteen minutes after administration of a 50 per cent dextrose solution by mouth. The solution of dextrose contains 2 Gm. of dextrose for each unit of insulin that the patient takes. The patient also receives, each morning, 100 cc. of water or milk in which two tablets of a preparation containing magnesium fluoride, iodide, bromide and chloride are dissolved. The treatment is administered for four or five days during which hyperazotemia is lowered to less than half the previous value. The treatment is then discontinued and a few days are allowed to elapse during which time azotemia continues to decline. During this time surgical interventions, especially on the urinary tract, can be performed with a better prognosis than before the treatment when azotemia was present. The author does not give detailed doses for the treatment.

Rivista di Patologia e Clin. d. Tubercolosi, Bologna

12: 145-224 (March 31) 1938

Osteoplastic Pneumonopathy. C. Manzini.—p. 145.
*Lipasic Power in Pulmonary Tuberculosis. G. Costantini and G. Tosi. —p. 179.
*Hydrochloric Gastric Secretion in Tuberculosis in Relation to Sympathetic Nervous System. A. Iraci.—p. 187.
Spontaneous Healing of Tuberculous Cavities of Lung. D. d'Arcangelo and C. Mazzini.—p. 193.

Lipasic Power in Pulmonary Tuberculosis.—Costantini and Tosi discuss the subject of relation between lipases and pulmonary tuberculosis. According to them, the tubercle bacillus induces a general organic reaction with consequent production of lipases and proteolytic enzymes. The authors review the literature and find that the immunity or increased resistance of certain animals to tuberculosis depends on the intensity of the lipolytic power of the blood or of certain tissues. The importance of the presence of lipases in the blood, the lymphs or certain tissues as lysing agents of tubercle bacilli is obvious. The normal lung has a lipolytic ferment the amount of which diminishes in pulmonary tuberculosis. The amount of lipases and the lipolytic power of the blood are diminished in tuberculosis with increasing or diminishing oscillations which are related to the improvement or aggravation of the disease. The mechanism of the lipolytic phenomenon of tubercle bacilli is not clear. The actual aim in controlling pulmonary tuberculosis is to stimulate the body to the production of new enzymes, especially those which may have a direct action on the capsule. The administration of fats with the diet failed. The authors succeeded in increasing the lipolytic power of the blood of rabbits by administering beeswax to the animals.

Hydrochloric Acid in Tuberculosis.—Iraci determined the gastric secretion of hydrochloric acid in twenty-five patients suffering from tuberculosis. He concludes that hyperchlor-

hydria or hypochlorhydria depend on the prevalence of a vagal or sympathetic innervation. The tuberculous toxins do not have a direct action on the gastric secretion. They aggravate, however, the condition of latent rupture of the vagosympathetic equilibrium that exists in pulmonary tuberculosis. The disease develops more frequently in patients with constitutional predominance of the sympathetic innervation than in those with a predominance of the vagal innervation. In the advanced stages of pulmonary tuberculosis the sympathetic innervation predominates over the vagal and there is hypochlorhydria. In disturbances of the gastric secretion in patients suffering from pulmonary tuberculosis it is advisable to give a combined treatment in order to control the changes of the gastric secretion and also of the sympathetic nervous system.

Klinische Wochenschrift, Berlin

17: 329-368 (March 5) 1938. Partial Index

Surface Tension in Serum and Plasma of Pulmonary Tuberculosis. F. E. Schmengler and H. Ferenbach.—p. 333.
*Modification of Islands of Langerhans Through the Vagus, by Means of Vitamins B_1 and C. J. Mosonyi and Z. Aszódi.—p. 337.
Treatment of Spastic Conditions of Hollow Organs. E. Lux.—p. 346.
Antiperistalsis in Stenoses of Esophagus. M. Dahm.—p. 347.
Protein Reaction (Triboulet's) in Feces and Its Significance. A. van Meeteren.—p. 350.

Islands of Langerhans and Vitamins B_1 and C.—Mosonyi and Aszódi cite earlier animal experiments in which they were able to show that the intravenous administration of vitamins B_1 and C leads to a greater secretion of insulin into the blood stream of dogs. The vagotropic action of the two vitamins has an important part. The results of animal experiments induced the authors to try the treatment in human subjects with and without diabetes mellitus. They found that in healthy subjects the intravenous administration of vitamins B_1 and C results in the secretion of larger quantities of insulin and in a reduction in the blood sugar. The same effects could be obtained in the majority of patients with diabetes mellitus. By the prolonged, partly parenteral and partly oral administration of both vitamins (B_1 and C) it was possible to produce a considerable increase in the tolerance for carbohydrates, and insulin could often, at least temporarily, be dispensed with in diabetic patients.

Medizinische Klinik, Berlin

34: 245-280 (Feb. 25) 1938. Partial Index

Acute Articular Rheumatism During Childhood. F. Thoenes.—p. 245.
Experiences with Gold Therapy (Solganal B. Oleosum) in Chronic Arthritis. F. Grögler.—p. 248.
Treatment of Rheumatic Disease by Histamine Iontophoresis. S. Irle.—p. 252.
Nature and Treatment of Whooping Cough. W. Keller.—p. 253.
*Failures of Vitamin C Therapy. G. Walther.—p. 260.
*Influence of L-Ascorbic Acid (Vitamin C) on Diabetes Mellitus. M. Oshima, T. Terashima and Y. Matsutani.—p. 262.

Failures of Vitamin C Therapy.—Walther reports cases of hemorrhagic diathesis in which treatment with vitamin C was without effect. In three cases of progressive thrombopenia, large doses of vitamin C failed to arrest the disorder. The author thinks that in the first of these cases a deficient resorption in the oral administration of the vitamin was the cause of the failure and that irreparable damage to the hemopoietic system was responsible in the other two. In four patients with hematuria resulting from hemophilia and glomerular nephritis, respectively, daily intravenous injections of from 100 to 500 mg. of vitamin C, for a period of from six to fourteen days remained ineffective. In three cases of essential thrombopenia the vitamin C therapy not only failed but a further reduction of thrombocytes also was observed in two of these patients. In one of them the number of thrombocytes increased again when the daily intravenous injections of vitamin C were discontinued. In one patient mild bronchopneumonia developed during prolonged parenteral vitamin C therapy. The question is discussed whether this patient had a hypersensitivity to cevitamic acid or whether there was a relative deficiency of the epithelial protective vitamin A as a result of excessive dosage of vitamin C.

Influence of Cevitamic Acid on Diabetes Mellitus.—Oshima and his associates studied the influence of cevitamic acid on the sugar content of the blood and urine in normal persons and in patients with diabetes mellitus. They found that in healthy subjects the intravenous injection of 300 mg. of cevitamic acid did not influence the blood sugar curve. In diabetic patients, however, the injection of 300 mg. of cevitamic acid produced nearly always a reduction of the sugar content of blood and urine. The authors report four cases of diabetic mellitus in which they resorted to treatment with cevitamic acid. In one of them the blood sugar was comparatively low and the urine was free from sugar. In this mild case of diabetes the effect of the cevitamic acid was not so noticeable as in the other cases.

Zentralblatt für Gynäkologie, Leipzig

62: 513-560 (March 5) 1938

*Experiences with Implantation of Ureters into Rectum According to Coffey-Mayo. L. Nürnberger.—p. 515.
Compression of Ureters by External Endometriosis: Case. H. Hauser.—p. 520.
Permanent Result of Göbell-Stoeckel's Plastic Operation of Pyramidal Fascia in Urinary Incontinence. W. Lindemann.—p. 525.
Lethal Urinary Phlegmon Resulting from Injury of Ureter by Crushing of Ureteral Calculus in Course of Forceps Delivery. K. W. Kramer.—p. 526.
Treatment of Complicated Vesicovaginal Fistulas. L. Milew.—p. 528.
*Diagnostic Value of Cystography in Placenta Praevia. K. Jabłoński and E. Meisels.—p. 532.

Implantation of Ureters into Rectum.—Nürnberger describes the histories of two cases of vesicovaginal fistulas in which he resorted to implantation of the ureters into the rectum according to the Coffey-Mayo method. Both patients died. Discussing these cases, the author directs attention to animal experiment by Reimers and to clinical observations made by Mikulicz-Radecki and Krauspe, which indicate that the implantation of the ureters into the rectum not only is likely to aggravate an existing infection but may also prepare the way for new ascending infections of the urinary tract. He concludes that operations for vesicovaginal fistulas always involve risks, which are especially great in the rectal implantation of the ureters.

Diagnostic Value of Cystography in Placenta Praevia.—Jabłoński and Meisels report observations with the cystographic method which Ude and Urner recommended for the diagnosis of placenta praevia. The method is suited especially for the cases in which the fetus is in the vertex position. Ude and Urner maintained that the distance between the lower outline of the fetal cranium and the contrast shadow of the bladder measures normally at the most 1 cm. and that this distance is taken up by the thickness of the wall of the urinary bladder, of the uterine wall and of the fetal scalp. Jabłoński and Meisels, however, assert that the distance is dependent on the following factors: (1) the degree of dilatation of the lower uterine segment and the lifting of the bladder connected with this and (2) the lowering of the fetal head. This explains why, between the seventh and tenth months of pregnancy, the distance becomes constantly smaller so that during the last weeks of pregnancy the outline of the head almost touches the shadow of the bladder. However, if a body is interposed between the fetal head and the uterine wall, such as for instance the placenta or a myoma, the distance is in excess of 1 cm. The cystography is done in the following manner: After evacuation of the bladder by means of a catheter, 40 cc. of contrast fluid (a 12.5 per cent solution of sodium iodide or another contrast substance) is introduced into the bladder. After withdrawal of the catheter, a ventrodorsal roentgenoscopy is made, with the patient in the reclining position and the central ray directed toward the rim of the symphysis. The authors made this test on thirty pregnant women. In sixteen of them hemorrhages had occurred during the second half of pregnancy and the other fourteen cases served as controls. They found that this roentgenologic method permits the detection or exclusion of the placenta praevia if it is of the central or lateral type. A placenta praevia marginalis, particularly if located on the posterior uterine wall, usually cannot be determined by means of this method. Another disadvantage is that the method can be used only if the fetus is in the vertex position. However, the authors suggest that, in some cases of oblique, transverse or pelvic position, external version into the vertex position can be tried. They succeeded in accomplishing this in three cases.

Vestnik Khirurgii, Leningrad

53: 111-198 (No. 140) 1937. Partial Index

Bactericidal Action of Oligodynamic Solutions of Heavy Metals Irradiated with Ultraviolet Rays. N. N. Mishchuk and S. E. Gotman.—p. 116.
Method of Demonstrating Erythrocytes of Transfused Homogenous Blood in Man. N. S. Voronov.—p. 120.
Experimental and Clinical Contributions to Question of Alcohol Therapy of Traumatic Shock. G. D. Obraztsov.—p. 123.
Tuberculosis of Thyroid. A. I. Sorkina and P. Ya. Esau.—p. 130.
Simultaneous Profuse Hemorrhage and Perforation of Gastroduodenal Ulcer. M. T. Fridman.—p. 134.
*Immediate and Late Results of Resection for Gastric Cancer. A. S. Fedoreev.—p. 139.

Results of Gastric Resection for Cancer.—Fedoreev states that, of the patients admitted to the Leningrad Onkological Institute during a period of six years because of cancer, 49 per cent were incurable, while in the succeeding four years the percentage of incurable cases amounted to 31. The total operability of the gastric cancer amounted to 9.6 per cent for the first five years and to 12.2 per cent in the succeeding five years. Operability among patients first studied in the dispensary gave an average of 27.7 per cent and that of the last four years 31.5. The incidence of gastric cancer in women was one tenth that of the incidence in men. Gastric cancer in young persons is particularly malignant and the late results are almost always unfavorable. The fact that the tumor may be palpated does not necessarily exclude its operability. In 66 per cent of 414 resections the tumor was palpable. Stricter operative indications, improvement in technic and careful preparation of the stomach through lavage with dilute hydrochloric acid solution brought about considerable improvement in the results and lowered the mortality for uncomplicated resections from 40 to 16 per cent. Further improvement in the immediate results is to be looked for principally along lines of limiting the operative indications by a medical staff with a sufficient clinical and technical experience. The author would particularly limit the indications for the so-called extensive resections involving some of the neighboring organs, since half of these patients do not survive the operation while the remainder succumb to recurrences within the first two years and but rarely survive three years. Resection of the stomach with a segment of the transverse colon gives an immediate mortality of 70 per cent, while those who survive live from one to two years. A five year survival is quite exceptional. This operation therefore is indicated in exceptional cases in which the neoplasm is sharply delimited. In such operations it is obligatory to bring out the end of the affervent loop of the colon in the form of an artificial anus or to bring out both ends and later perform an ileosigmoidostomy.

Norsk Magasin for Lægevidenskapen, Oslo

99: 241-352 (March) 1938

*Alcohol Determinations in Legal Necropsies. G. Guldberg.—p. 241.
Multiple Hemangiomas in Intestinal Tract: Case. P. Amundsen.—p. 278.
Translumination as Aid in Roentgen Examination of Joints. A. Scheel.—p. 281.
*Thrombo-Embolism and Mortality Rate in Operations for Hernia. H. F. Harbitz.—p. 287.
*Remarks on Clinical Observations in Frontal Intracranial Tumors. A. Torkildsen.—p. 310.
Pancreatic Cyst: Case. A. Arnesen.—p. 326.

Alcohol Determinations in Necropsies.—Guldberg performed forty-nine legal necropsies in which determinations of alcohol were made and illustrates by examples from these cases how the tests may check and supplement the results of necropsy and other evidence produced. In four of seven cases the alcohol concentration in the stomach was found to differ from that in the blood and urine. He considers the possibility of a diffusion of alcohol from the stomach into the immediate neighborhood and points out that too high values may be obtained in specimens of blood from the heart; he advises taking blood for alcohol determinations in legal cases from places remote from the stomach. In one case the test was successfully made in the blood eleven days after death, in another in the urine seven weeks after death.

Mortality Rate in Operations for Hernia.—Harbitz's material comprises 1,046 cases of hernia in which operations were performed from 1926 to 1935. The interest centers in the 836 cases of persons over the age of 20, 705 of whom had nonincarcerated hernias (550 inguinal, forty-seven femoral, 108 umbilical hernias, hernias of the linea alba and ventral hernias) and 131 incarcerated hernias (fifty-two inguinal, forty-nine femoral, thirty umbilical hernias, hernias of the linea alba and ventral hernias). Thrombo-embolism occurred in fourteen cases (2.8 per cent) of the nonincarcerated hernias, with a mortality of 0.14 per cent; one patient died from postoperative pneumonia and the total mortality was 0.28 per cent. In the incarcerated hernias, thrombo-embolism was seen in four cases (3 per cent), with a mortality of 0.77 per cent; there were twenty-one deaths from ileus and the total mortality was 16 per cent. Thrombo-embolism occurred in 2.87 per cent of all patients over 20. No appreciable difference appeared between the sexes, and the side operated on apparently had no significance. Nonincarcerated inguinal hernias were relatively frequent in patients of lower age. The author finds that complications of embolic kind seem especially likely to appear in femoral hernias as compared with the other two groups studied. The total frequency of thrombo-embolism in femoral hernias was 8.3 per cent, the frequency in nonincarcerated femoral hernias 10.6 per cent and, in the incarcerated, 6 per cent. More than half of the femoral hernias operated on were incarcerated and the mortality in these was 19.1 per cent.

Frontal Intracranial Tumors.—In the *Norsk Magasin for Lægevidenskapen* **99:**137 (Feb.) 1938 Torkildsen reviewed data concerning 353 cases of intracranial tumor, including 154 verified cases. He now analyzes the thirty-one verified cases of tumor of the frontal lobe from this material (eighteen gliomas, six meningiomas, two abscesses, one cholesteatoma and four cases in which the expansive lesion was verified on pneumography but not classified) in eighteen men and thirteen women; all but three were over 20 years of age. The most important symptoms are discussed and all symptoms which appeared as the first three symptoms are tabulated in their chronologic order, with their duration. The most important symptoms were headaches, epilepsy, nausea and vomiting, together with loss of vision, usually a late symptom. Twenty-two patients had mental symptoms, of which dulness was the most common; these symptoms were more frequent in cases of tumor on the left side than on the right. Choked disk was seen in twenty-four cases. It appeared in all cases with vomiting and nausea, in sixteen of the eighteen cases with headache and in nine of the fourteen cases with epilepsy. There was paralysis of the facialis muscle in eighteen cases. Derangement in the sensory system appeared in six cases, in the motor system in twelve, and in two cases with homolateral hemiplegia. Examination of the spinal fluid in nineteen cases revealed definitely increased cell count in only one instance.

Ugeskrift for Læger, Copenhagen

100: 243-274 (March 10) 1938

Grave Anemia in Chronic Acetanilid Intoxication (Cephatyl Tablets). E. Meulengracht and J. T. Hansen.—p. 243.
"Pseudo-Uremia" in Patients with Hypertrophy of Prostate: Nephrogenic Acidosis. V. Aalkjær.—p. 245.
Vitamin K in Human Pathology: Preliminary Report. H. Dam and J. Glavind.—p. 248.
*Paroxysmal Heart Block in Young Person. W. T. Andersen.—p. 250.

Paroxysmal Heart Block.—The complete atrioventricular heart block in a man aged 20 disappeared after two days' treatment with atropine. The history excluded trauma or medicamental cause. During the six days preceding the attack the patient had had increasing pain in the epigastrium and nausea, which is ascribed to an acute disorder at the cardia (esophagitis, gastritis?). Andersen considers the case one of neurogenic reflex block. He cites a case with attacks of heart block (Weiss and Ferris) believed to have been caused in a reflex way through the vagus, and another of neurogenic block (Flauma and Klima) reflected through the superior laryngeal nerve and refers to Gilchrist, who asserts that he has seen eight cases of neurogenic block. The author says that digitalis block may perhaps have a similar origin. The attacks are successfully treated with atropine, epinephrine or ephedrine. The possibility of the disorder ought to be borne in mind. It might occasionally manifest itself in operations in the neck region; preliminary treatment with atropine or ephedrine should hinder its occurrence.